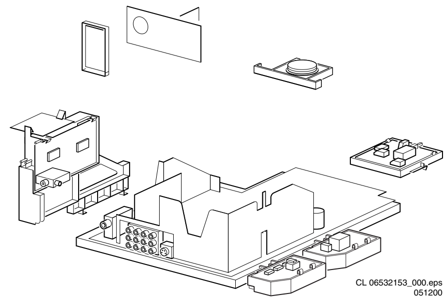
Colour Television

Chassis

A10A

AA

Service
Service
Service



Service Manual

Contents

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PHILIPS

1. Technical specifications, connection facilities and chassis overview

1.1 Technical specifications

Mains voltage	:	90 - 276 Vac
Power consumption	:	max 160 W
Standby consumption	:	< 3 W
Mains frequency	:	50 - 60 Hz
Tuning system	:	PLL
Reception	:	PAL B/G/D/K/I
	:	SECAM B/G/D/K/ K1
	:	NTSC M
Sound system	:	2CS BG
	:	NICAM B/G/D/K/I/L
	:	2 NICAM BG/D
Sound output	:	2 x 5 W
	:	2 x 10 W + 10 W (Virtual dolby)
Aerial input	:	Coaxial 75 Ω

1.2 Connection facilities

1.2.1 Control buttons and Side I/O connections

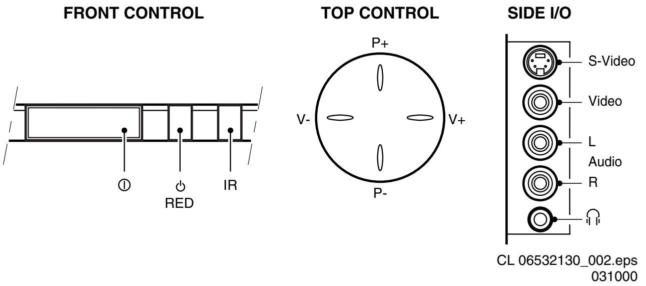


Figure 1-1

SVHS

1 -	gnd	
2 -	gnd	
3 - Y	1 Vpp / 75 Ω	
4 - C	0.3 Vpp / 75 Ω	

Audio / video

1 - Video	1 Vpp / 75 Ω	
2 - Audio (L)	0.2 Vrms / 10 kΩ	
3 - Audio (R)	0.2 Vrms / 10 kΩ	
4 - Headphone	32 - 2000 Ω / 10 mW	

1.2.2 Rear connections

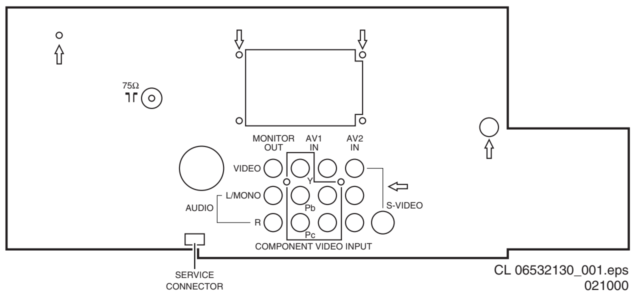


Figure 1-2 (figure can deviate)

Monitor out

1 - Video	1 Vpp / 75 Ω	
2 - Audio (L)	0.5 Vrms / 10 kΩ	
3 - Audio (R)	0.5 Vrms / 10 kΩ	

AV1 in

1 - Y	0.7 Vpp / 75 Ω	
2 - Pb	0.7 Vpp / 75 Ω	
3 - Pr	0.7 Vpp / 75 Ω	
4 - Video	1 Vpp / 75 Ω	
5 - Audio (L)	0.5 Vrms / 10 kΩ	
6 - Audio (R)	0.5 Vrms / 10 kΩ	

AV2 in

1 - Video	1 Vpp / 75 Ω	
2 - Audio (L)	0.5 Vrms / 10 kΩ	
3 - Audio (R)	0.5 Vrms / 10 kΩ	

AV2 in (SVHS)

1 -	gnd	
2 -	gnd	
3 - Y	1 Vpp / 75 Ω	
4 - C	0.3 Vpp / 75 Ω	

1.3 Chassis overview

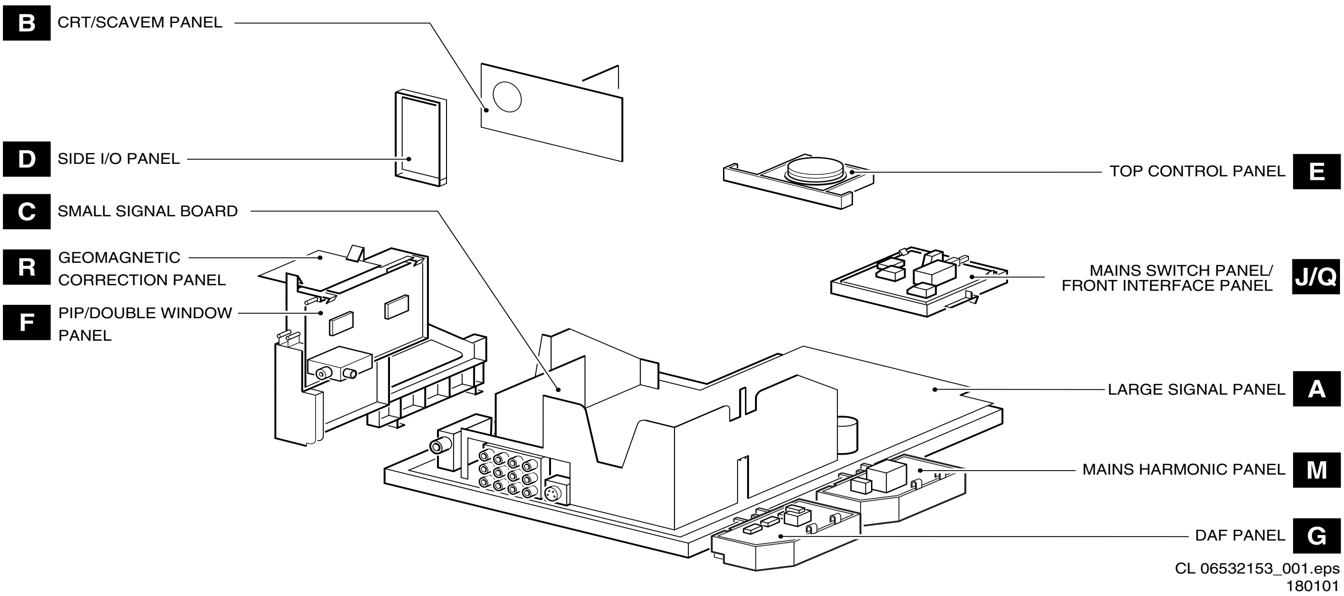


Figure 1-3

2. Safety- & maintenance instructions, warnings and notes

2.1 Safety instructions for repairs

Safety regulations require that during a repair:
- Safety components, indicated by the symbol ▲, should be replaced by components identical to the original ones;
- When replacing the CRT, safety goggles must be worn.

Safety regulations require that after a repair, the set must be returned in its original condition. In particular attention should be paid to the following points:
- General repair instruction: as a strict precaution, we advise you to resolder the solder joints, through which the horizontal deflection current is flowing, in particular:
  - All pins of the line output transformer (LOT);
  - Fly-back capacitor(s);
  - S-correction capacitor(s);
  - Line output transistor;
  - Pins of the connector with wires to the deflection coil;
  - Other components through which the deflection current flows.

Note: This resoldering is advised to prevent bad connections due to metal fatigue in solder joints and is therefore only necessary for television sets older than 2 years.
- The wire trees and EHT cable should be routed correctly and fixed with the mounted cable clamps.
- The insulation of the mains lead should be checked for external damage.
- The mains lead strain relief should be checked for its function in order to avoid touching the CRT, hot components or heat sinks.
- The electrical DC resistance between the mains plug and the secondary side should be checked (only for sets which have a mains isolated power supply). This check can be done as follows:
  - Unplug the mains cord and connect a wire between the two pins of the mains plug;
  - Set the mains switch to the 'ON' position (keep the mains cord unplugged!);
  - Measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 MΩ and 12 MΩ.
  - Switch off the TV and remove the wire between the two pins of the mains plug.
- The cabinet should be checked for defects to avoid touching of any inner parts by the customer.

2.2 Maintenance instructions

It is recommended to have a maintenance inspection carried out by a qualified service employee. The interval depends on the usage conditions:
- When the set is used under normal circumstances, for example in a living room, the recommended interval is 3 to 5 years.
- When the set is used in circumstances with higher dust, grease or moisture levels, for example in a kitchen, the recommended interval is 1 year.
- The maintenance inspection contains the following actions:
  - Execute the above-mentioned 'general repair instruction'.
  - Clean the power supply and deflection circuitry on the chassis.
  - Clean the picture tube panel and the neck of the picture tube.

2.3 Warnings

- In order to prevent damage to IC's and transistors, all high-voltage flashovers must be avoided. In order to prevent damage to the picture tube, the method shown in Fig. 2-1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position VDC). Discharge until the meter reading is 0 V (after approx. 30 s).

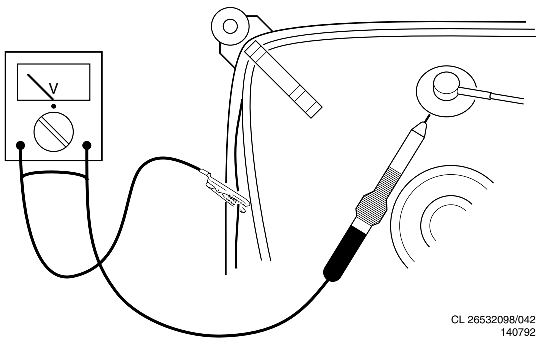


Figure 2-1

- All IC's and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential. Available ESD protection equipment:
  - Complete kit ESD3 (small table mat, wristband, connection box, extension cable and earth cable) 4822 310 10671.
  - Wristband tester 4822 344 13999.
- Together with the deflection unit and any multipole unit, the used flat square picture tubes form an integrated unit. The deflection and the multipole units are set optimally at the factory. Adjustment of this unit during repair is therefore not recommended.
- Be careful during measurements in the high-voltage section and on the picture tube.
- Never replace modules or other components while the unit is switched ON.
- When making settings, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

2.4 Notes

- The direct voltages and oscillograms should be measured with regard to the tuner earth (⏚), or hot earth (⏚) as this is called.
- The direct voltages and oscillograms shown in the diagrams are indicative and should be measured in the Service Default Mode (see chapter 5) with a colour bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz.
- Where necessary, the oscillograms and direct voltages are measured with (ㄱГ) and without (ㄱГ) aerial signal. Voltages in the power supply section are measured both for normal operation (⏻) and in Standby (⏻). These values are indicated by means of the appropriate symbols.
- The picture tube PWB has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.
- The semiconductors indicated in the circuit diagram and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.
- DOLBY, the double D symbol and PRO LOGIC are trademarks of Dolby Laboratories Licensing Corporation. Manufactured under license from Dolby Laboratories Licensing Corporation.

DOLBY SURROUND
PRO • LOGIC

Colour Television

29" / 34"

Instructions for use

29PT6361
34PT6361



Let's make things better.

PHILIPS

3139 125 28001

INTRODUCTION

Thank you for purchasing this televison set. You are now the proud owner of a **PHILIPS** TV set which promises full value to you as a customer. Please read the instruction manual carefully and thoroughly to help you install and operate your TV set.

TABLE OF CONTENTS

Safety Information/Useful Tips

Safety

Disconnect mains plug when :
- the red light below the TV screen is flashing continuously.
- a bright white line is displayed across the screen.
- cleaning the TV screen. Never use abrasive cleaning agents. Use a slight damp chamois leather or soft cloth.
- there is a lightning storm.
- the set is left unattended for a prolonged period of time.

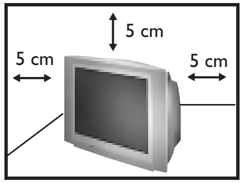
Useful Tips
- Do not place your TV set under direct sunlight or heat.
- Avoid placing your set (e.g. near the window) where it is likely to be exposed to rain or water.
- Do not leave your set on standby mode for a prolonged period of time. Switch off set to allow it to be demagnetised. A demagnetised set supports good picture quality.
- Do not shift or move the set around when it is switched on. Uneveness in colour in some parts of the screen may occur.
- Never attempt to repair a defective TV yourself. Always consult a skilled service personnel.

Before Calling Service

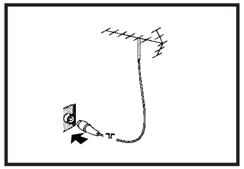
Below is a list of frequently occurred symptoms. Before you call for dservice, make these simple checks. Some of these symptoms can easily be rectified if you know what to do.

Symptom	What you should do
Colour patch (uneveness)	• Switch off the TV by the mains power button. Wait for 20 minutes before switching on again. • Check the TV is not placed too near speakers or magnetic objects.
No power	• Check the TV's AC power cord is plugged into the mains socket. If there is still no power, disconnect plug. Wait for 60 seconds and re-insert plug. Switch on the TV again.
No picture	• Check the antenna connection at the rear of the TV. • Possible TV station problem. Try another channel.
Good picture but no sound	• Try increasing the volume. • Check that the sound is not muted. If it is muted, press the (mute) button on the remote control to restore sound.
Good sound but poor colour or no picture	• Try increasing the contrast and brightness setting.
Snowish picture and noise	• Check antenna connection at the rear of the TV.
Horizontal dotted lines	• Possible electrical interference e.g. hairdryer, vacuum cleaner, etc. Switch off appliances.
Double images or "Ghost" images	• Possible poor positioning of antenna. Using a highly directional antenna may improve reception.
TV not responding to remote control handset	• Check life span of batteries of remote control handset. • Aim remote control handset directly at remote control sensor lens on the TV.

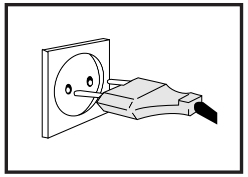
Installation



Positioning of the TV set
- Place your TV set on a solid base, strong enough to withstand the weight of the set.
- Leave a space of at least 5 cmaround each side of the TV set to allow for proper ventilation.
- Do not place TV set near a radiator or other sources of heat.
- Do not place TV set where it can be exposed to rain or excesssive moisture.

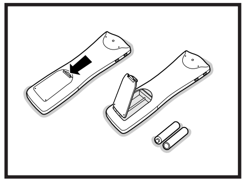


Connecting the Aerial
- Insert the aerial plug into the socket ┳┳ at the rear of the set.



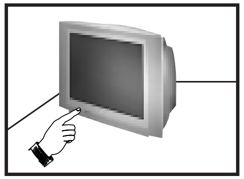
Connecting to the mains
- Insert the mains plug into the wall socket. (For correct mains voltage, refer to the type sticker at the rear of the set).

Note : This diagram is not representative of the actual plug and socket.



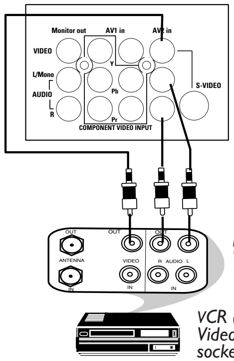
Using the Remote Control
- Insert the correct type of batteries into the compartment.
- Ensure the batteries are placed in the right direction.

Note : Remove the batteries from the remote control handset if handset is not used for a long time.



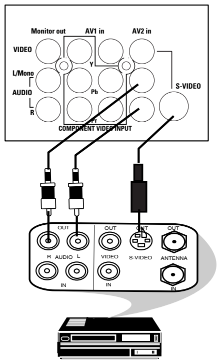
Switching on the TV set
- Press the mains power button to switch on/off the TV set.
- If the set is on standby mode (indicator light is red), press the Standby button on the remote control to switch on set.

CONNECTING THE AUDIO/VIDEO SOCKETS (PLAYBACK)



You can view the playback of VCR tapes (Video Disc players, camcorders, etc.) by using the AUDIO and VIDEO INPUT sockets on the rear of the TV.

– Connect the **VIDEO** and **AUDIO IN** sockets on the rear of the TV to the **AUDIO** and **VIDEO OUT** sockets on the VCR.

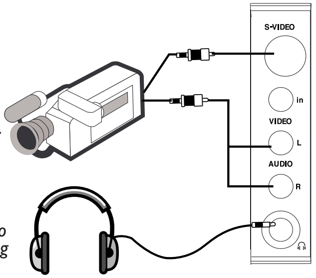


The S-Video connection on the rear of the TV is used for the playback of S-VHS VCR tapes, Video Discs, Video Games or Compact Disc-Interactive (cd-i) discs. Better picture detail and clarity is possible with the S-Video playback as compared to the picture from a normal antenna (RF) connection.

– Connect the **S-VIDEO** socket on the rear of the TV to the **S-VHS OUT** socket on a S-VHS VCR.
– Connect the **AUDIO IN** sockets from the rear of the TV to the **AUDIO OUT** sockets on the VCR.

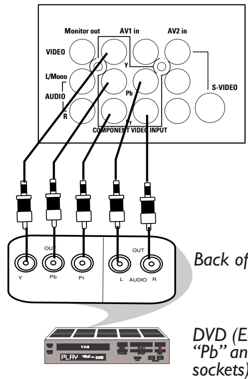
Note : You need not connect the **VIDEO IN** socket of the TV if **S-VIDEO IN** socket is connected.

CONNECTING THE AUDIO/VIDEO SOCKETS (PLAYBACK)



For more convenient direct playback connections, the Side Audio/Video Input sockets allow for quick and easy connections, particularly Camcorder tape recordings.

– Connect the **S-VIDEO** socket (if available) from the Camcorder to the Side **S-VIDEO** socket of the TV. You need not connect the Side **VIDEO IN** socket of the TV if the **S-VIDEO** socket is connected.
– Connect the **AUDIO OUT** sockets (Right and Left) from the Camcorder to the Side **AUDIO IN** sockets.

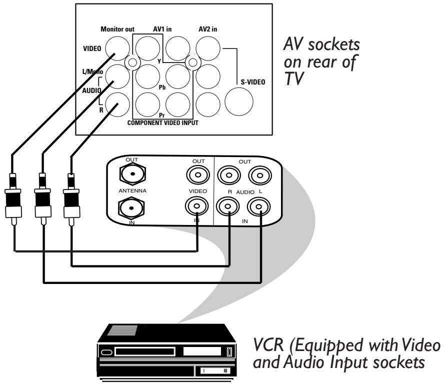


You can view the playback of DVD discs by using the COMPONENT VIDEO INPUT sockets on the rear of the TV.

– Connect the **"Y", "Pb"** and the **"Pr" INPUT** sockets on the TV to the **"Y", "Pb"** and **"Pr" OUTPUT** sockets on the DVD to view playback of DVD discs.

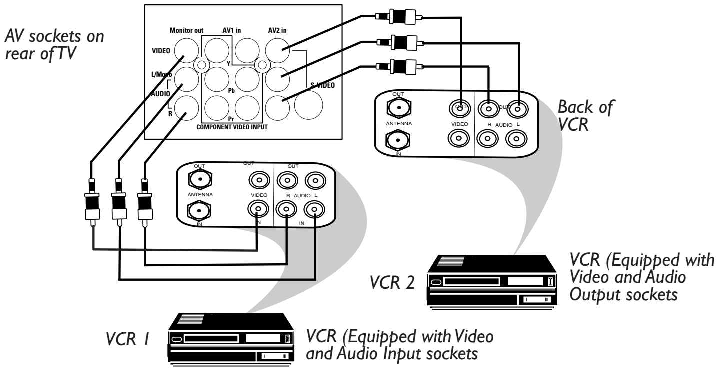
CONNECTING THE AUDIO/VIDEO SOCKETS (RECORDING)

Connection for recording from the TV channel



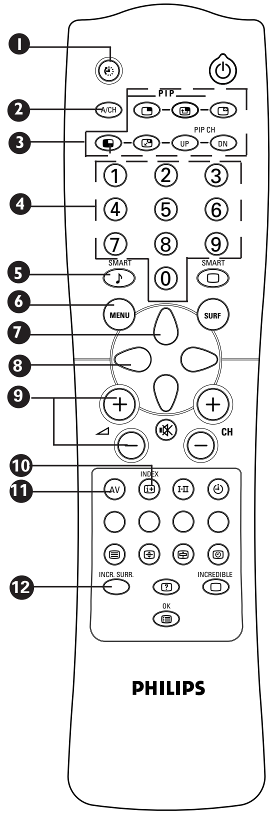
– Connect the corresponding **INPUT** sockets of the VCR to the **MONITOR OUTPUT** sockets on the rear of the TV.
– To enhance the sound of your TV, connect the **AUDIO L** and **R** sockets to an external audio system instead of the VCR. For mono equipment, connect only the **AUDIO L** socket.

Connection for recording from one VCR to another VCR



– Connect the sockets of the VCR which you wish to record from, to the corresponding sockets at either **AV1** or **AV2.**.
– Connect the sockets of the receiving VCR to the **MONITOR OUTPUT** sockets on the rear of the TV.

FUNCTIONS OF REMOTE CONTROL



❶ **SLEEPTIMER**
Allows you to select a time period after which the set will switch to standby mode automatically.

❷ **A/CH (Alternate Channel)**
Allows you to alternate between the last viewed channel and the present channel.

❸ **PIP ON/OFF (Picture-in-Picture On/Off)**
Allows you to access the Picture-in-Picture and Double Window features. (For more detailed description of functions, refer to the sections on "Activating the PIP and Double Window Control")

❹ **DIGIT (0 -9)**
Allows you select a channel. **Note** : For a 2-digit number, the second digit must be entered before the "–" sign disappears.

❺ **SMART SOUND**
Allows you to select your desired sound setting from 4 types of sound settings.

❻ **MENU**
Displays main menu. Also exits menu from screen.

❼ **CURSOR UP**
Allows you to select the next item on the menu.

❽ **CURSOR LEFT**
Allows you to access the sub-menus and adjust the settings.

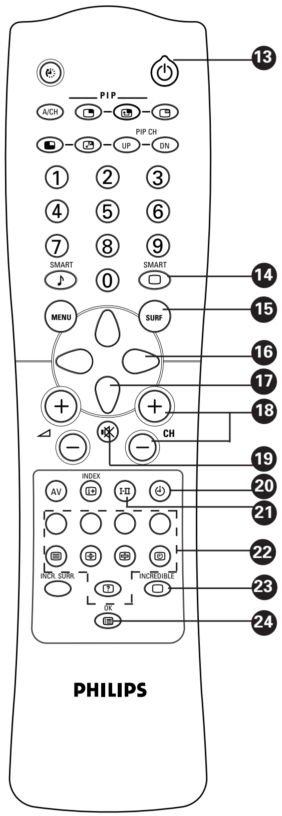
❾ **VOLUME + / –**
Increases or decreases volume.

❿ **OSD**
– Displays the channel number, sound and colour transmission mode, status of the sleeptimer., channel name (if channel is named) and the current time (if current time is being entered in the Timer menu).
– Also allows you to exit menu from screen.

⓫ **AV**
Allows you to select the AV channels.

⓬ **INCREDIBLE SURROUND**
– Allows you to select Incredible Surround/Virtual Dolby surround sound when transmission is in stereo mode. Virtual Dolby Surround allows you to enjoy the sensation of Home Cinema surround sound with just 2 front speakers.
– Allows you to select Spatial Sound when transmission is in mono mode.

FUNCTIONS OF REMOTE CONTROL



13 STANDBY
- Switch set off temporarily to standby mode. (The red light indicator lights up when set is on standby mode).
- To switch on set from standby mode, press Channel Up/Down, Digit (0 -9) or Standby button.

14 SMART PICTURE
Allows you to select your desired picture setting from 5 types of picture settings.

15 SURF
Allows you to select up to a maximum of 10 channels and view quickly the selected channels.

16 CURSOR RIGHT
Allows you to access the sub-menus and adjust the settings.

17 CURSOR DOWN
Allows you to select the next item on the menu.

18 CHANNEL + / –
Selects channel in ascending or descending order.

19 MUTE
Mutes sound. To restore sound, press button again.

20 TIMER
Allows you to set the clock to switch to another channel at a specified time while you are watching nother channel or when the set is on standby mode.

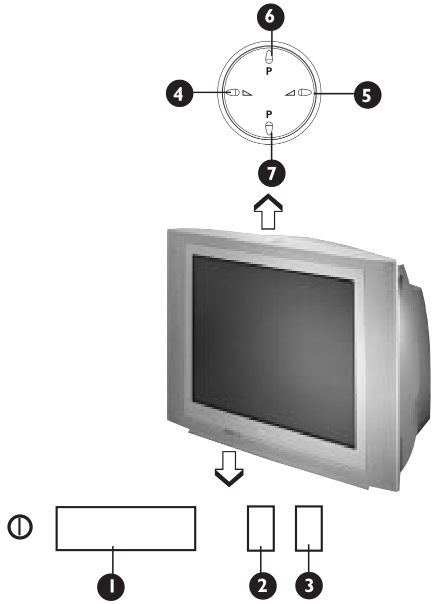
21 I-II
Allows you to switch from Stereo to Mono sound during stereo transmission or to choose between language I or language II during dual sound transmission.

22 TELETEXT
Allows you to access teletext information. (For detailed description of functions, refer to section on "Using the Teletext"

23 INCREDIBLE PICTURE
Allows you to view a more vivid and realistic picture with better contrast when the "ON" function is selected.

24 PROGRAMME LIST
Allows you to navigate through a list of installed programmes for a quick overview of the channels and activate the channel you have selected.

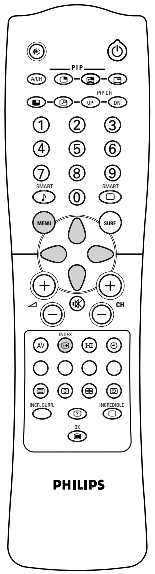
FUNCTIONS OF TV CONTROLS



1	**Mains Power button**	Switch mains power on or off.
2	**Standby Light indicator**	Indicate red light when standby mode is activated.
3	**Remote Sensor**	Acts as a sensor for activating the controls of the TV when remote control handset is aimed at it.
4	**Volume ◺ button**	Adjust sound volume softer.
5	**Volume ◿ button**	Adjust sound volume louder.
6	**Programme ⌂ button**	Select channel in ascending order.
7	**Programme ⌄ button**	Select channel in descending order. **Note** • You can enter the main menu by pressing both the **Volume** ◿ and ◺ buttons at the same time. • Press the **Programme** ⌄ or ⌂ button to select the next item on the menu. • Press the **Volume** ◿ or ◺ button to access the sub-menus and adjust the settings.

SELECTING THE MENU LANGUAGE AND AUTOMATIC TUNING OF CHANNELS 10

Before you tune in the channels by the Auto Store method, select the menu language of your choice.



Press button — **Result on TV Screen**

1. Enter main menu.

```
► PICTURE      BRIGHTNESS
• SOUND        COLOUR
• FEATURES     CONTRAST
• INSTALL      SHARPNESS
               COLOUR TEMP
```

2. Press button repeatedly until **INSTALL** is selected.

```
• PICTURE      LANGUAGE
• SOUND        AUTO STORE
• FEATURES     MANUAL STORE
► INSTALL      SORT
               CHANNEL EDIT
```

3. Enter **INSTALL** menu.

```
INSTALL
◄ LANGUAGE       ► ENGLISH
• AUTO STORE       B.MELAYU
• MANUAL STORE     中文
• SORT
```

4. Enter **LANGUAGE** mode.
5. Select desired language.

OR

```
INSTALL
◄ LANGUAGE       ► ENGLISH
• AUTO STORE       B.MELAYU
• MANUAL STORE     中文
• SORT
• CHANNEL EDIT
```

6. Exit from language mode.

```
INSTALL
◄ LANGUAGE       ► ENGLISH
• AUTO STORE       B.MELAYU
• MANUAL STORE     中文
• SORT
```

7. Select **AUTO STORE**.

```
INSTALL
• LANGUAGE
◄ AUTO STORE     ► SEARCH
• MANUAL STORE
• SORT
```

8. Enter **AUTO** store mode.
9. Start automatic tuning.

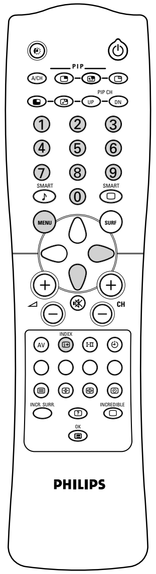
```
INSTALL
• LANGUAGE
• AUTO STORE     ► SEARCHING
• MANUAL STORE     PLEASE WAIT
• SORT             CHAN.FOUND 8
• CHANNEL EDIT     048.31 MHZ
```

10. When tuning is completed, exit menu from screen.

```
INSTALL
• LANGUAGE
◄ AUTO STORE     ► SEARCH
• MANUAL STORE
• SORT
• CHANNEL EDIT
•
```


MANUAL TUNING OF CHANNELS

Manual tuning allows you to store each programme manually.



Press button — **Result on TV Screen**

1. Enter main menu.
2. Press button repeatedly until **INSTALL** is selected.

```
• PICTURE      LANGUAGE
• SOUND        AUTO STORE
• FEATURES     MANUAL STORE
► INSTALL      SORT
               CHANNEL EDIT
```

3. Enter **INSTALL** menu.
4. Press button repeatedly until **MANUAL STORE** is selected.

```
INSTALL
• LANGUAGE       COLOUR SYSTEM
• AUTO STORE     SOUND SYSTEM
► MANUAL STORE   SEARCH
• SORT           CHANNEL
• CHANNEL EDIT   STORE
•
```

5. Enter **MANUAL STORE** menu.
6. Select **SEARCH**.

```
INSTALL
 MANUAL STORE
  • COLOUR SYSTEM
  • SOUND SYSTEM
  ◄ SEARCH          ► 048.31MHZ
  • CHANNEL
  • STORE
```

7. Start manual tuning of channel. Searching stops once a transmitting channel is found.

```
INSTALL
 MANUAL STORE
  • COLOUR SYSTEM
  • SOUND SYSTEM
  ◄ SEARCH          ► 196.25MHZ
  • CHANNEL
  • STORE
```

8. Select **CHANNEL**.
9. Key in the desired channel number.

```
INSTALL
 MANUAL STORE
  • COLOUR SYSTEM
  • SOUND SYSTEM
  • SEARCH
  ◄ CHANNEL         ►    18
  • STORE
```

10. Select **STORE.**
11. Store tuned channel.
Note : If you want to continue searching for another transmitting channel, repeat steps 7 to 11.

```
INSTALL
 MANUAL STORE
  • COLOUR SYSTEM
  • SOUND SYSTEM
  • SEARCH
  • CHANNEL
  ◄ STORE           ► STORED
```

12. Exit menu from screen.

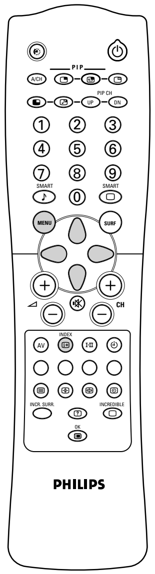
```
INSTALL
 MANUAL STORE
  • COLOUR SYSTEM
  • SOUND SYSTEM
  ◄ SEARCH          ► 196.25MHZ
  • CHANNEL
  • STORE
```

SELECTING THE COLOUR /SOUND SYSTEM

This feature allows you to select your desired **COLOUR** and **SOUND** system. If **AUTO** is selected, the respective colour and sound system will be automatically selected according to the transmission system.
Note : Select another colour and sound system if reception is poor at **AUTO** mode.

Press button | **Result on TV Screen**

Repeat **step 1** to **step 5** as in **"MANUAL TUNING OF CHANNELS"**



6. **COLOUR SYSTEM** is selected. Enter **COLOUR SYSTEM** mode.
7. Select the desired colour system.

```
INSTALL
 MANUAL STORE
  ◂COLOUR SYSTEM  ▪ AUTO
  ▪SOUND SYSTEM     PAL
  ▪SEARCH           SECAM
  ▪CHANNEL          NTSC 3.58
  ▪STORE            NTSC 4.43
```

8. Exit from colour system mode.
9. Proceed to select **SOUND SYSTEM.**

```
INSTALL
 MANUAL STORE
  ▪COLOUR SYSTEM    AUTO
  ◂SOUND SYSTEM  ▪  B/G
  ▪SEARCH           D/K
  ▪CHANNEL          I
  ▪STORE            M
```

10. Enter **SOUND SYSTEM** mode.
11. Select the desired sound system.

```
INSTALL
 MANUAL STORE
  ▪COLOUR SYSTEM  ▪ AUTO
  ◂SOUND SYSTEM     B/G
  ▪SEARCH           D/K
  ▪CHANNEL          I
  ▪STORE            M
```

12. Exit from sound system mode.
13. Press button repeatedly until **STORE** is selected.

```
INSTALL
 MANUAL STORE
   COLOUR SYSTEM
  ▪SOUND SYSTEM
  ▪SEARCH
  ▪CHANNEL
  ◂STORE          ▪▸
```

13. Store selected systems.

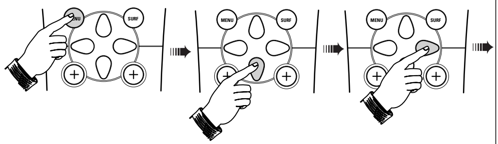
```
INSTALL
 MANUAL STORE
   COLOUR SYSTEM
  ▪SOUND SYSTEM
  ▪SEARCH
  ▪CHANNEL
  ◂STORE          ▪▸STORED
```

14. Exit menu from screen.

```
INSTALL
 MANUAL STORE
  ▪COLOUR SYSTEM
  ▪SOUND SYSTEM
  ◂SEARCH         ▪▸048.31MHZ
  ▪CHANNEL
  ▪STORE
```


FINE TUNING OF CHANNELS

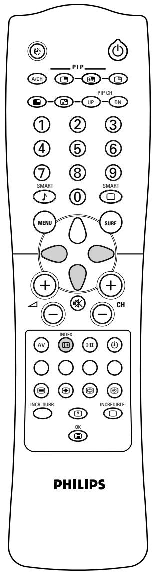
This feature allows you to adjust picture reception in areas of weak reception.



```
INSTALL
 ◂LANGUAGE      ▪▸ ENGLISH
 ▪AUTO STORE       B.MELAYU
 ▪MANUAL STORE
 ▪SORT
 ▪CHANNEL EDIT
```

1. Enter main menu. 2. Select **INSTALL**. 3. Enter install menu.

Press button | **Result on TV Screen**



4. Press button repeatedly until **MANUAL STORE** is selected.

```
INSTALL
 ▪ LANGUAGE      COLOUR SYSTEM
 ▪ AUTO STORE    SOUND SYSTEM
 ▸MANUAL STORE   SEARCH
 ▪ SORT          CHANNEL
 ▪ CHANNEL EDIT  STORE
```

5. Enter **MANUAL STORE** menu.

```
INSTALL
 MANUAL STORE
  ◂COLOUR SYSTEM ▪▸ AUTO
  ▪SOUND SYSTEM     PAL-SECAM
  ▪SEARCH           NTSC
  ▪CHANNEL
  ▪STORE
```

6. Press button repeatedly until **FINE TUNE** is selected.
7. Start fine-tuning until desired picture and sound is obtained.

```
INSTALL
 MANUAL STORE
  ▪SOUND SYSTEM
  ▪SEARCH
  ▪CHANNEL
  ▪STORE
  ◂FINE TUNE     ——+——▸
```

8. Select **STORE**.

```
INSTALL
 MANUAL STORE
   COLOUR SYSTEM
  ▪SOUND SYSTEM
  ▪SEARCH
  ▪CHANNEL
  ◂STORE          ▪▸
```

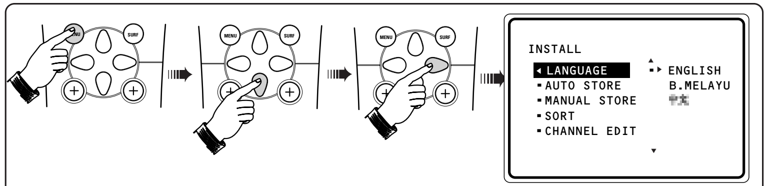
9. Store last fine-tuned status.

```
INSTALL
 MANUAL STORE
  ▪COLOUR SYSTEM
  ▪SOUND SYSTEM
  ◂SEARCH         ▪▸048.31MHZ
  ▪CHANNEL
  ▪STORE
```

10. Exit menu from screen.

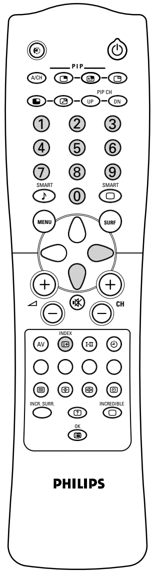
Sorting of Channels

This feature allows you to change the channel number to your choice for a particular TV station.

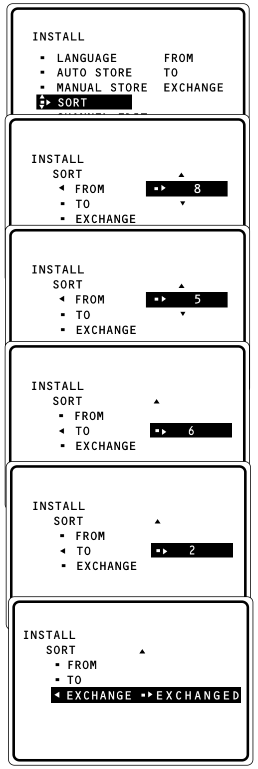


1. Enter main menu. 2. Select **INSTALL**. 3. Enter install mode.

Press button | **Result on TV Screen**



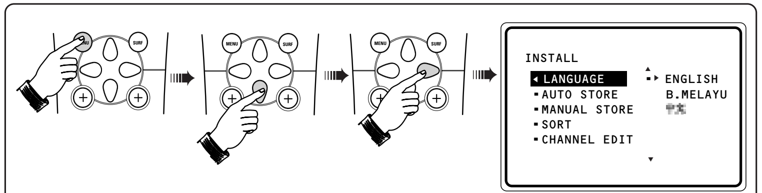
4. Press button repeatedly until **SORT** is selected.
5. Enter **SORT** menu and press (**CURSOR RIGHT**) button again to enter **FROM** mode.
6. Key in the channel number in the **FROM** column, that is, the channel you want to swap from.
7. Exit from **FROM** mode.
8. Select **TO** and press (**CURSOR RIGHT**) button to enter **TO** mode.
9. Key in the channel number in the **TO** column. that is, the channel you want to swap to.
10. Exit from **TO** mode
11. Select **EXCHANGE**.
10. Activate exchange of channels.



Editing of Channels

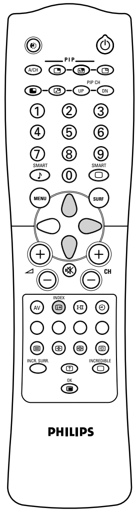
This feature allows you to edit or skip channels which have bad or weak TV signal or channels that you do not watch often.

Note : Once a channel is skipped, you cannot have access to it by the **CHANNEL +** or **–** button. You can only access the channel by the **DIGIT (0 -9)** button.



1. Enter main menu. 2. Select **INSTALL.** 3. Enter install mode.

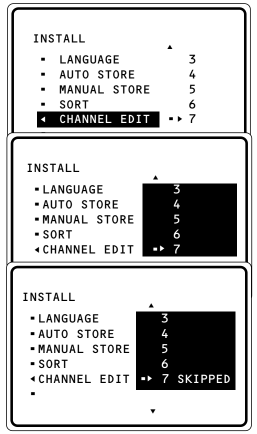
Press button | **Result on TV Screen**



4. Press button repeatedly until **CHANNEL EDIT** is selected.
5. Enter channel edit mode.
6. Select the channel you want to skip.

OR

7. Activate skipped mode.
8. Exit menu from screen.

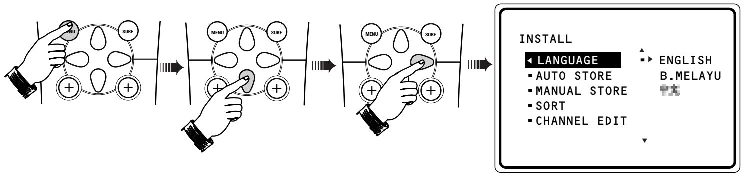


How to add back channels

- Repeat steps 1 to 5 as in **"Editing of Channels"**.
- Select the channel you want to add back by the **(CURSOR UP)** or **(CURSOR DOWN)** button.
- Press the **(CURSOR RIGHT)** button to activate adding back of channel.
- Exit menu from screen by the **(OSD)** button.

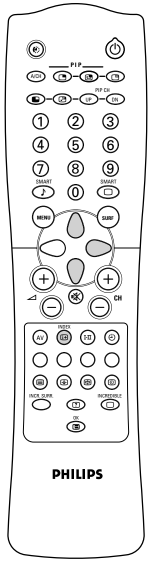
Naming of Channels

This feature allows a selection of 40 channels for preset names. It also allows you to enter a new name or modify an existing name of a channel including external channels.

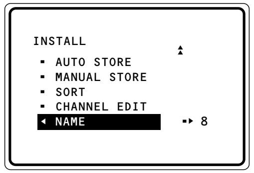


1. Enter main menu. 2. Select **INSTALL.** 3. Enter install mode.

Press button | **Result on TV Screen**



4. Press button repeatedly until **NAME** is highlighted.



5. Enter **NAME** mode

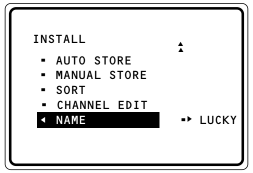


6. Press button repeatedly to cycle through the characters and select desired character. Move to next character slot by the **(CURSOR RIGHT)** button and select in the next character. (You can enter up to a maximum of 5 characters)

OR



7. Store named channel.



8. Exit menu from screen.

Using the Picture/Sound Menu

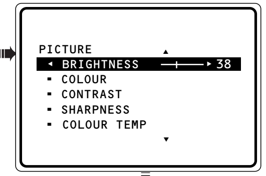
The picture and sound menus allow you to make adjustments to the picture and sound. It also allow you to select and activate other features in the menu.

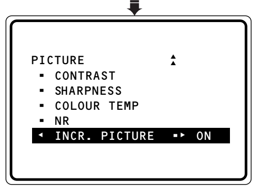
1 Press the **(MENU)** button to enter main menu.

2 Use the or **(CURSOR UP/DOWN)** buttons to select the items on the **PICTURE/SOUND** menu.

3 Use the or **(CURSOR LEFT/RIGHT)** buttons to access the sub-menus.

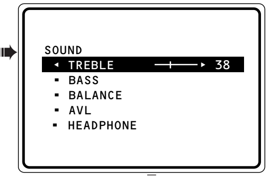
Picture menu items	Activities
Brightness	Increase or decrease brightness level.
Colour	Increase or decrease color level.
Contrast	Increase or decrease contrast level until lightest parts of the picture show good detail.
Sharpness	Increase or decrease sharpness level to improve detail in the picture.
Colour Temp	Allows you a choice of 3 picture settings (NORMAL,WARM and COOL).
NR (Noise Reduction)	Allows you to reduce the "noise" (little dots on the picture) from weak signal broadcast. Selecting the "ON" option will make the picture clearer.
Incredible Picture	Selecting the "ON" option enhances the details in the picture. The result is a more dynamic and vivid picture.





Note : HUE feature is only applicable to NTSC programmes. The **HUE** item will not appear on the menu if programme is in PAL mode.

Sound menu items	Activities
Treble	Increase or decrease the high frequency level.
Bass	Increase or decrease the low frequency level.
Balance	Adjusts the balance of the right and left speakers' sound output.
AVL (Auto Volume Leveller)	As variation in signal conditions can result in a sudden change in volume during commercial breaks or channel switching, selecting the "ON" function will enable the volume to remain at a standard volume level.
Headphone	Allows you to adjust the volume and balance of the headphone

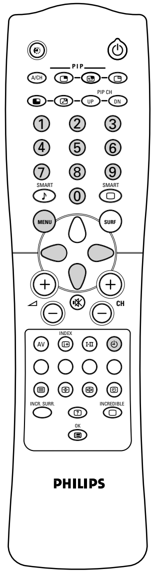




Note : Headphone feature does not work if PIP (Picture-in-Picture) mode is activated.

ACTIVATING THE TIMER

The Timer feature allows you to set the timer to switch to another channel at a specified time while you are watching another channel or when the TV is on standby mode.
Note : For the timer to function, the set must not be switched off. Once the set is switched off, the timer is disabled.



Press button — **Result on TV Screen**

1. Enter **TIMER** menu.

```
FEATURES
  TIMER
  ◂ TIME          ◂▸ – – : – –
  ▪ START TIME
  ▪ STOP TIME
  ▪ CHANNEL
  ▪ ACTIVATE
```

2. Enter **TIME** mode.
3. Key in the current time For example, if the current time is 12:30, key digit 1 and 2 in the hour column, followed by digit 3 and 0 in the minute column.

```
FEATURES
  TIMER
  ◂ TIME          ◂▸ 12 : 30
  ▪ START TIME
  ▪ STOP TIME
  ▪ CHANNEL
  ▪ ACTIVATE
```

4. Exit from **TIME** mode.
5. Select **START TIME**.

```
FEATURES
  TIMER
  ▪ TIME
  ◂ START TIME    ◂▸ – – : – –
  ▪ STOP TIME
  ▪ CHANNEL
  ▪ ACTIVATE
```

6. Enter the **START TIME** mode.
7. Key in the time you want the programme to be switched on.

```
FEATURES
  TIMER
  ▪ TIME
  ◂ START TIME    ◂▸ 13:30
  ▪ STOP TIME
  ▪ CHANNEL
  ▪ ACTIVATE
```

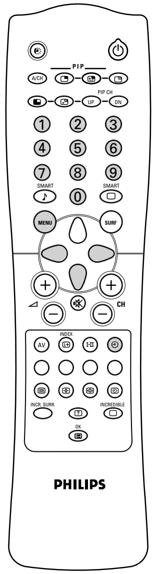
8. Exit from **START TIME** mode.
9. Select **STOP TIME**.

```
FEATURES
  TIMER
  ▪ TIME
  ▪ START TIME
  ◂ STOP TIME     ◂▸ – – : – –
  ▪ CHANNEL
  ▪ ACTIVATE
```

10. Enter **STOP TIME** mode.
11. Key in the time you want the programme to be switched off.

```
FEATURES
  TIMER
  ▪ TIME
  ▪ START TIME
  ◂ STOP TIME     ◂▸ 15: 30
  ▪ CHANNEL
  ▪ ACTIVATE
```


ACTIVATING THE TIMER (CONTINUE)



Press button — **Result on TV Screen**

11. Exit from **STOP TIME** mode.
12. Select **CHANNEL**.

```
FEATURES
  TIMER
  ▪ TIME
  ▪ START TIME
  ▪ STOP TIME
  ◂ CHANNEL       ◂▸ 3
  ▪ ACTIVATE
```

13. Enter the **CHANNEL** mode.
14. Key in the channel you want to switch to.

```
FEATURES
  TIMER
  ▪ TIME
  ▪ START TIME
  ▪ STOP TIME
  ◂ CHANNEL       ◂▸ 8
  ▪ ACTIVATE
```

15. Exit from **CHANNEL** mode.
16. Select **ACTIVATE**.

```
FEATURES
  TIMER
  ▪ TIME
  ▪ START TIME
  ▪ STOP TIME
  ▪ CHANNEL
  ◂ ACTIVATE      ◂▸ OFF
```

17. Activate timer. You can select to activate timer by **DAILY** or **ONCE** mode.

```
FEATURES
  TIMER
  ▪ TIME
  ▪ START TIME
  ▪ STOP TIME
  ▪ CHANNEL
  ◂ ACTIVATE      ◂▸ ONCE
```

18. Select **DISPLAY**.
19. Select **ON** mode if you want to display the current time on the TV screen.

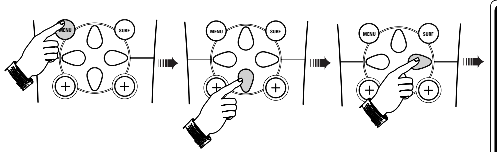
```
FEATURES
  TIMER
  ▪ START TIME
  ▪ STOP TIME
  ▪ CHANNEL
  ▪ ACTIVATE
  ◂ DISPLAY       ◂▸ ON
```

20. Exit menu from screen.

Note
30 seconds before the timer is activated, a message indicating the time left for the channel switch will appear on the screen. To disable the channel switch, press any button on the remote control.

Activating the Child Lock (Access Code)

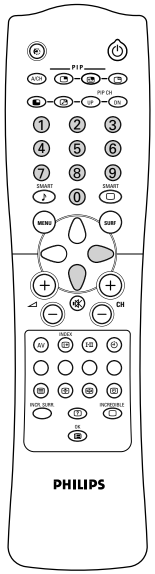
The Child Lock feature allows you to lock channels to prevent their children from watching programmes they deem undesirable.
Note :You cannot have access to the locked channels via the top controls of the TV set. You can only have access to the locked channels via the remote control.



```
FEATURES
 TIMER         TIME
 CHILD LOCK    START TIME
 PIP           STOP TIME
 FORMAT        CHANNEL
 BLUE MUTE     ACTIVATE
```

1. Enter main menu. 2. Select **FEATURES** . 3. Enter **FEATURES** menu.

Press button	Result on TV Screen



4. Select **CHILD LOCK** .

```
FEATURES
 • TIMER         ACCESS CODE
 CHILD LOCK      – – – –
 • PIP
 • FORMAT
 • BLUE MUTE
```

5. Enter **ACCESS CODE** mode.
6. Key in access code **0711** (0711 is the default access code).A message **INCORRECT** will appear.

```
FEATURES
 • TIMER         ACCESS CODE
 ◂ CHILD LOCK    X X X X
 • PIP           INCORRECT
 • FORMAT
 • BLUE MUTE
```

7. Key in **0711** the second time.When the message **CORRECT** appears, the **CHILD LOCK** menu is now accessible.

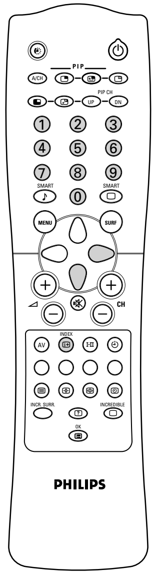
```
FEATURES
 • TIMER         ACCESS CODE
 ◂ CHILD LOCK    X X X X
 • PIP           CORRECT
 • FORMAT
 • BLUE MUTE
```

You can now proceed to change the access code of your choice.

```
FEATURES
   CHILD LOCK
   ◂ LOCK CHANNEL  ◂▸ 2
   • CHANGE CODE      3
   • CLEAR ALL        4
                      5
                      6
```


Activating the Child Lock (Change code)

Press button	Result on TV Screen



8. Select **CHANGE CODE.**

```
FEATURES
 CHILD LOCK
  • LOCK CHANNEL   ENTER
  ◂ CHANGE CODE    NEW CODE
  • CLEAR ALL      – – – –
```

9. Enter **CHANGE CODE** mode.
10. Key in the access code of your choice.

```
FEATURES
 CHILD LOCK
  • LOCK CHANNEL   ENTER
  ◂ CHANGE CODE    NEW CODE
  • CLEAR ALL      X X X X
```

11. Confirm access code.

```
FEATURES
 CHILD LOCK
  • LOCK CHANNEL   CONFIRM
  ◂ CHANGE CODE    CODE
  • CLEAR ALL      X X X X
```

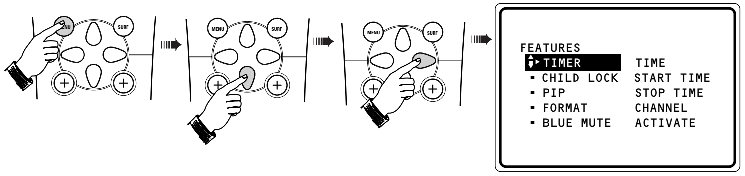
When the new code is confirmed, the message **CORRECT** will appear.

```
FEATURES
 CHILD LOCK
  • LOCK CHANNEL   CONFIRM
  ◂ CHANGE CODE    CODE
  • CLEAR ALL      X X X X
                   CORRECT
```

12. Exit menu from screen.

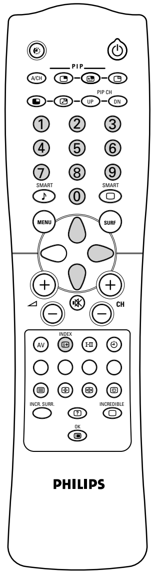
Note : After you have exit menu from screen and you want to enter child lock menu again , you need to key the new access code only once. If you have forgotten the new access code, key in 0711 twice to enter the child lock menu. Upon entering the child lock menu, you can proceed to change code again.

ACTIVATING THE CHILD LOCK (LOCK CHANNEL)

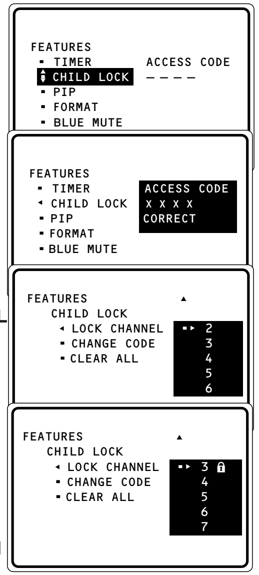


1. Enter main menu. 2. Select **FEATURES**. 3. Enter **FEATURES** menu.

Press button | **Result on TV Screen**



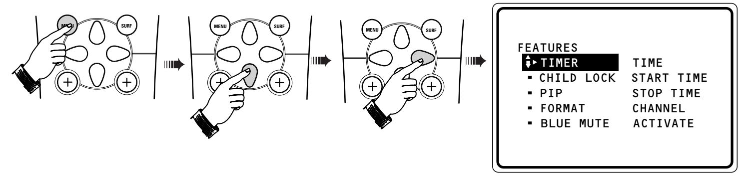
4. Select **CHILD LOCK** .
5. Enter **ACCESS CODE** mode.
6. Key in access code .
7. Enter **LOCK CHANNEL** mode.
8. Select the channel you want to block.
9. Activate blocking of channel. A keylock symbol will appear beside the channel number indicating that it is locked.
10. Exit menu from screen.



Note :You cannot have access to the locked channels via the top controls of the TV set. You can only have access to the locked channels via the remote control.
If you attempt to enter the **INSTALL** menu after locking a channel, a message "Enter **ACCESS CODE**" will appear on the screen. You need to enter the **ACCESS CODE** to enable you to enter the **INSTALL** menu.

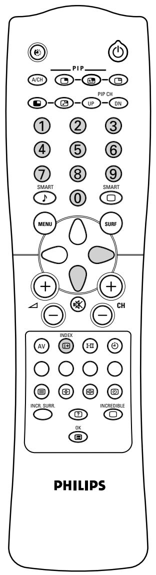
ACTIVATING THE CHILD LOCK (CLEAR ALL)

To unlock channels that you have locked, enter the Child Lock menu and activate the **CLEAR ALL** mode.

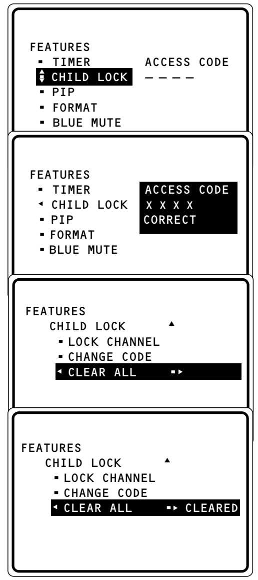


1. Enter main menu. 2. Select **FEATURES** 3. Enter **FEATURES** menu.

Press button | **Result on TV Screen**



4. Select **CHILD LOCK**.
5. Enter **ACCESS CODE** mode.
6. Key in access code.
7. Press button repeatedly until **CLEAR ALL** is selected.
8. Activate clearing of all locked channels.
9. Exit menu from screen.



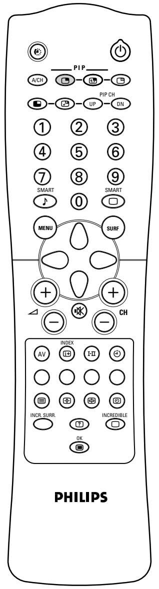
Note
You can also unlock individual channel by the **LOCK CHANNEL** menu.

- Repeat **step 1** to **7** as in **"ACTIVATING THE CHILD LOCK (LOCK CHANNEL)"**.
- Select the channel you want to unlock by the or (**CURSOR UP** / **DOWN**) buttons.
- Press the (**CURSOR RIGHT**) button to unlock channel (the keylock symbol will disappear).

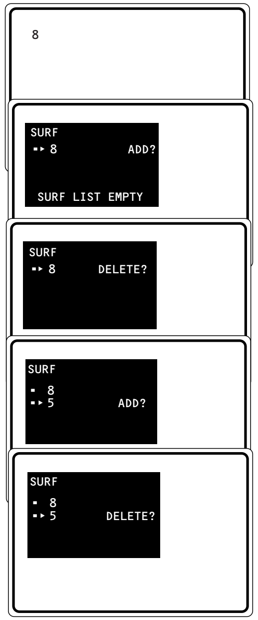
USING THE SURF CONTROL

A list or series of previously viewed channels can be selected with the **SURF** button. This feature allows you to switch between different TV programmes that currently interest you. You can set up to a maximum of eight channels in the **SURF** list.

How to add a channel to the surf list



Press button		Result on TV Screen
	1. Select a channel you want to add to the surf list.	
	2. Enter **SURF** menu.	
	3, Add selected channel to the surf list.	
	Repeat steps 1 - 3 to add more channels to the surf list.	
	4. After you have completed addind the selected channels to the surf list, exit menu from screen.	



Note :To view the the selected channels in the surf list, press the **SURF** button repeatedly to cycle through the channels.

How to delete a channel from the surf list

1. Press the (**SURF**) button to display surf list.
2. Press the (**SURF**) button repeatedly to cycle through the surf list and select the channel you want to delete.
3. Press the (**CURSOR RIGHT**) button to delete channel from the surf list.
4. Repeat all the above steps if you want to delete more channels from the surf list.

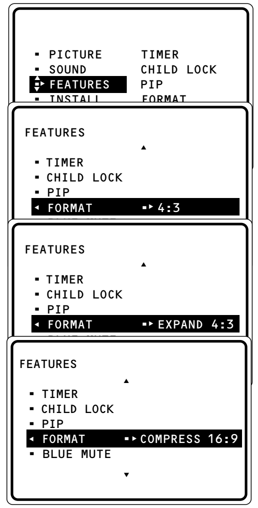
USING THE SCREEN FORMAT

You can have a choice of different formats for your viewing pleasure, namely : - **4:3** mode, **EXPAND 4:3** mode and **COMPRESS 16:9** mode through the **FORMAT** menu.

How to access the Screen Format

1. Press the (**MENU**) button to enter main menu and press the (**CURSOR DOWN**) button repeatedly until **FEATURES** is selected.
2. Press the (**CURSOR RIGHT**) button to enter **FEATURES** menu.
3. Press the (**CURSOR DOWN**) button repeatedly until **FORMAT** is selected.
4. Press the (**CURSOR RIGHT**) button repeatedly to cycle through the different formats (**4:3, Expand 4:3** or **Compress 16:9**) and select your desired format.

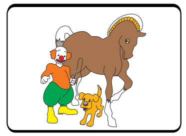
Note : You can also select your desired Screen Format by the (**CURSOR UP**) and (**CURSOR DOWN**) buttons.



When to use the Screen Formats

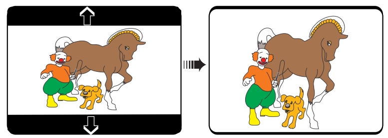
4:3 format

Select the 4:3 format if you want to display the 4:3 picture using the full surface of the screen.



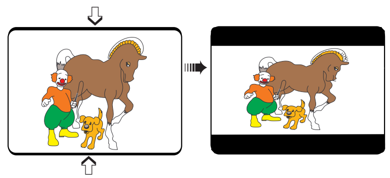
Expand 4:3 format

Select the Expand 4:3 format if you want to expand movie images recorded in the letterbox format. When this format is selected, the black horizontal bars at the top and bottom are expanded thus filling up the entire TV screen.



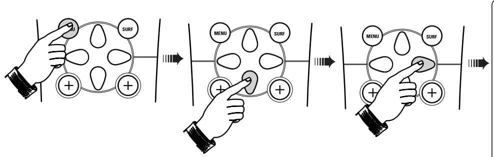
Compress 16:9 format

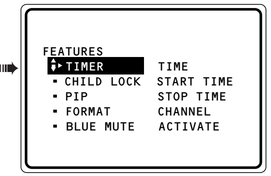
Select the Compress 16:9 format if you want to compress full screen movie images into letterbox format. When this format is selected, black horizontal bars can be seen at the top and bottom of the TV screen.



ACTIVATING THE BLUE MUTE CONTROL

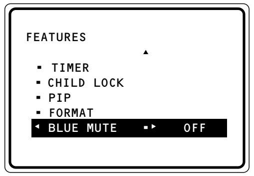
The Blue Mute feature indicates to you the absence of signal in the transmission when the "**ON**" option is activated. Upon the detection of absence of signal, the TV screen will turn blue in colour.





1. Enter main menu. 2. Select **FEATURES**. 3. Enter the **FEATURES** menu.

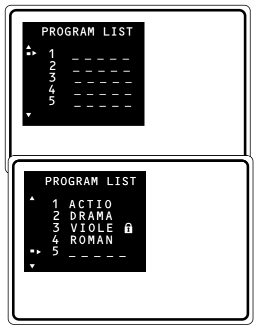
4. Press the (**CURSOR DOWN**) button repeatedly until **BLUE MUTE** is selected.
5. Press the (**CURSOR RIGHT**) button to select **ON** to activate blue mute feature.
6. Press the (**OSD**) button to exit menu from screen.



USING THE PROGRAMME LISTING FEATURE

Programme listing feature allows you to navigate through a list of installed programmes for a quick overview of the channels and activate the channel you have selected.

1. Press the (**PROGRAMME LIST**) button to display the list of installed programmes. The current channel is highlighted.
2. Press the (**CURSOR UP**) or (**CURSOR DOWN**) button to cycle through the programme list and highlight the channel number you want to activate.
3. Press the (**CURSOR RIGHT**) button to activate the channel you have selected.
4. Press the (**OSD**) button to exit menu from screen.



SMART PICTURE AND SMART SOUND CONTROL

SMART PICTURE feature offers you a choice of 5 picture settings, namely, **RICH, NATURAL**, **SOFT**, **PERSONAL and MULTIMEDIA**.

SMART SOUND feature offers you a choice of 4 sound settings, namely, **THEATRE, MUSIC, VOICE** and **PERSONAL**.

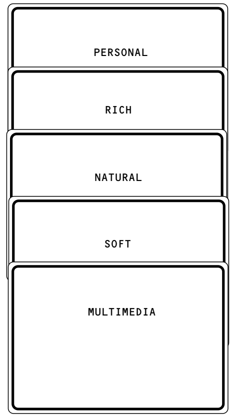
Note : If you want to view the pre-set settings for Brightness, Colour, Contrast and Sharpness levels, for Smart Picture and pre-set settings for Treble and Bass levels for Smart Sound, you must press the (**OSD**) button for 5 seconds.

Press SMART (**SMART PICTURE**) or SMART (**SMART SOUND**) button repeatedly to cycle through the settings to select your desired mode.

Definition of Picture Settings

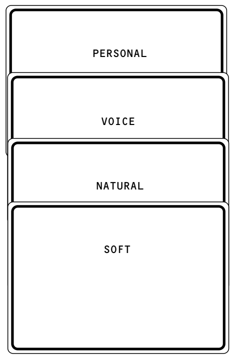
PERSONAL : Picture settings are set to your preference.
RICH : Emphasize very vibrant colours. (Suitable for AV mode in brightly-lit room)
NATURAL : Emphasize original colours.
SOFT : Emphasize "warm" colours. (Suitable for dimly-lit room condition and gives cinema-like effect when light is switched off).
MULTIMEDIA : Emphasize "soft" colours. (Suitable for playing computer games, surfing, etc.)

Note : The **PERSONAL** setting is the setting that you set up using the Picture menu in the main menu. This is the only setting in the Smart Picture settings that can be changed. All the other settings are pre-set at the factory.



Definition of Sound Settings

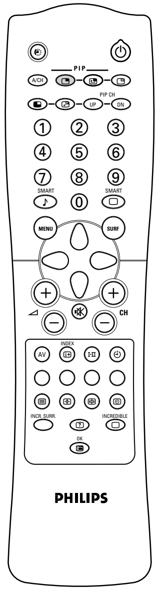
PERSONAL : Sound settings are set to your preference.
VOICE : Emphasize high tone. (Treble boosted)
MUSIC : Emphasize low tone. (Bass boosted)
THEATRE : Emphasize sensation to action. (Bass and Treble boosted)



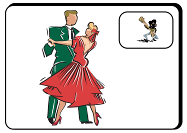
ACTIVATING THE PIP (PICTURE-IN-PICTURE) AND DOUBLE WINDOW CONTROL

Picture-in-Picture feature allows you to call up a subscreen within your main screen enabling you to watch two channels at the same time.
Double Window feature allows you to divide the main screen into two sub-screens enabling two channels to be watched simultaneously.
Note : PIP and Double Window features cannot be activated when teletext mode is on.

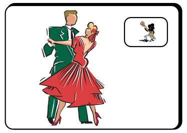
How to switch on the PIP/Double Window screen



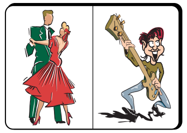
- Press the (**PIP On/Off**) button to switch on PIP mode. (A normal size PIP screen appears).



- Press the button the second time to change the normal size PIP screen to a smaller size.



- Press the button the third time to switch to Double Window screens in 4:3 format.



- Press the button the fourth time to switch to Double Window screens in 16:9 format.



Note : When the programme on the PIP screen is in NTSC mode or transmission, the picture size appears smaller. Likewise, when programme on the main screen is in NTSC mode or transmission, the picture size appears smaller.



16:9 format (NTSC mode)

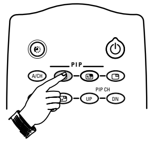
- Press the button the fifth time to switch off 16:9 Double Window screens.



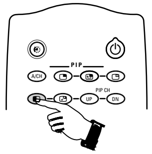
4:3 format (NTSC mode)

ACTIVATING THE PIP (PICTURE-IN-PICTURE) CONTROL

How to select the various external sources



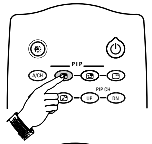
- Press the (**PIP On/Off**) button to switch on PIP screen.



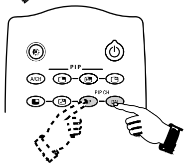
- Press the (**PIP Source**) button repeatedly to cycle through the various external connections and select the desired PIP source.



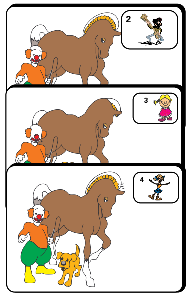
How to select a PIP channel



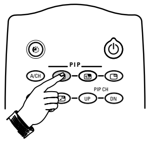
- Press the (**PIP On/Off**) button to switch on PIP screen.



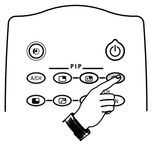
- Press the (**PIP Up**) or (**PIP Down**) button to select a PIP channel in ascending or descending order.



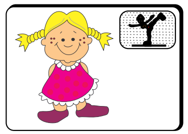
How to freeze the PIP screen



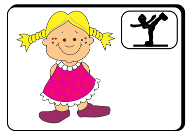
- Press the (**PIP On/Off**) button to switch on PIP screen.



- Press (**PIP Freeze**) button once to freeze the PIP screen. Freezing the PIP screen allows you to view a programme in the still mode. For example, you may want to write down some information from the PIP screen, freezing the screen will allow you time to do so.
- Press the (**PIP Freeze**) button the second time to unfreeze the PIP screen.

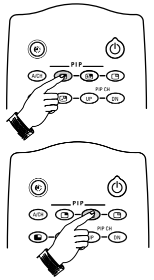


PIP Freeze



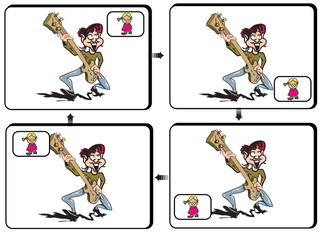
PIP Unfreeze

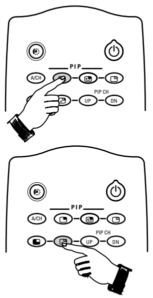
ACTIVATING THE PIP (PICTURE-IN-PICTURE) CONTROL



How to position the PIP screen

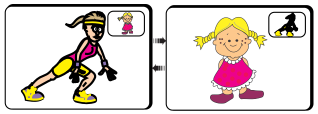
- Press the (**PIP On/Off**) button to switch on PIP screen.
- Press the (**PIP Position**) button repeatedly to your desired position. (You can choose the PIP screen to be on the top left corner, top right corner, bottom right corner or the top bottom left corner).





How to swap the PIP screen and the main screen

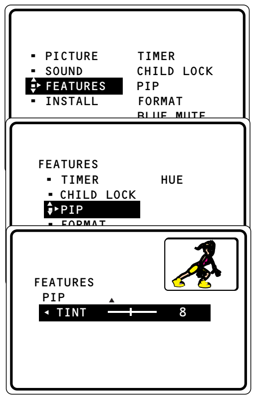
- Press the (**PIP On/Off**) button to switch on PIP screen.
- Press the (**PIP Swap**) button to swap the programme in the PIP screen and the programme in the main screen.



How to adjust the PIP Hue setting

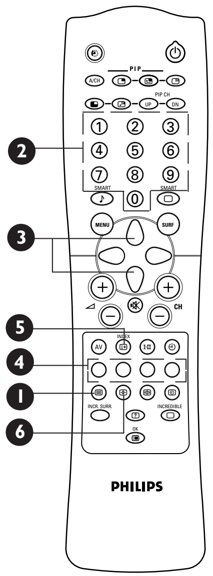
1. Press the (**MENU**) button to enter main menu.
2. Press the (**CURSOR DOWN**) button repeatedly until **FEATURES** is selected.
3. Press the (**CURSOR RIGHT**) button to enter the **FEATURES** menu.
4. Press the (**CURSOR DOWN**) button repeatedly until **PIP** is selected.
5. Press the (**CURSOR RIGHT**) button to enter **PIP** menu.
6. Press the (**CURSOR LEFT**) or (**CURSOR RIGHT**) button to adjust **HUE** setting to your desired level.
7. Press the (**OSD**) button to exit menu from screen.

Note : Hue adjustments in the PIP programmes will only take effect if programmes are in NTSC mode.



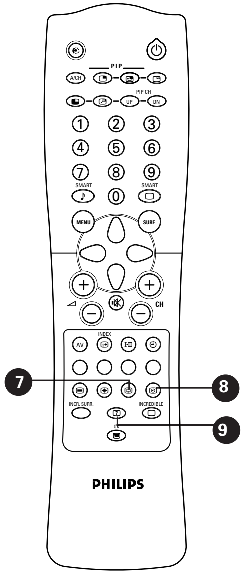
USING THE TELEXTEXT

If a TV channel broadcast contains teletext information, each channel that broadcasts teletexttransmits a page (index page) with information on how to use the teletext system, usually on page 100. The system transmitted is indicated in the option line at the bottom of the screen.



Press button	Result on TV Screen
1 On/Off teletext and Superimpose teletext page over TV programme	Press the button once to switch on teletext display. (A channel in which teletext is being transmitted must be selected). Press the button the second time superimpose the teletext page over the TV programme. Press the button the third time to exit teletext mode.
2 Selecting a teletext page 1 2 3 4 5 6 7 8 9 0	Key in the required teletext page (3 digits). The page number is displayed at the top left hand corner of the screen. When the teletext page is located, the counter stops searching. If the counter keeps searching, it means that the page is not available for selection. If you make a mistake in keying the page number, you have to complete keying the 3-digit number before re-keying the correct page number.
3 Accessing a teletext page	Press the **CURSOR UP** button to display the next page and the **CURSOR DOWN** button to display the previous page.
4 Direct Access to an item or corresponding pages	The 4-colour buttons allow you to access directly an item or corresponding pages.
5 Main Index INDEX	Press the button to return to the main index page.
6 Enlarge	Press the button once to enlarge and view the top half of the page. Press the button the second time to enlarge and view the bottom half of the page. Press the button the third time to return to normal size page.

Using the Teletext (Continue)



Press button	Result on TV Screen
7 **Hold**	A selected page sometimes contains a few sub-pages. The sub-page will automatically move to the next sub-page after about 20 seconds. The total number of sub-pages are indicated at the top right hand corner of the screen. Press the button once to hold page and the second time to release holding of page.
8 Subcode/Time Display	By adding a sub-code, you can call up a sub-page and hold it. Enter the teletext page number (the teletext page must have sub-pages in it). Press the button and "– – – –" is displayed at the upper left hand corner. Enter the subpage with 4 digits : e.g. 0003 for 3/4 (third of 4 pages). You can also use the Cursor Left and Right buttons to access the sub-page. To cancel the subcode, press button again. Pressing this button during normal viewing (only applicable to those channels that is broadcasting teletext), the time will be displayed at the top right hand corner of the screen.
9 **Reveal/ Conceal**	Press the button once to reveal hidden information (solutions to puzzles, riddles, etc). Press the button the second time to conceal information. This button is applicable only to teletext page with puzzles, riddles, etc.)

How to select your favourite page

This feature allows you select 4 of your favourite or most commonly viewed page and stored them in the favourite page selection. You can then access directly your favourite page by the colour buttons without having to key in the page number.

1. Press the **TELEXTEXT ON/OFF**) button to enter teletext mode.
2. Press the (**MENU**) button to enter favourite page selection. **Note** :The colour alphabets at the bottom of the screen is now changed to page numbers.
3. Key in your favourite page by the (**DIGIT 0 -9**) buttons.
4. Press the (**INDEX/OSD**) button to highlight pager numbers.
5. Select the colour button on your remote control you want your favourite page to be stored.
6. Repeat **step 3** to **5** to select and store other favourite pages.

Specifications

	29PT6361	34PT6361
Picture tube screen size	72 cm	85 cm
Picture tube visible area	68 cm	80 cm
Audio Output **Speaker** **Subwoofer**	2 x 10 W 10 W	
Set Dimensions **Width** **Depth** **Height**	 79 cm 50 cm 59 cm	 89 cm 56 cm 69 cm
Net Weight of Set	approximate 45 kg	approximate 64 kg

TV System	
Colour	**Sound**
PAL	B/G
PAL	D/K
PAL	I
NTSC (4.43)	B/G
NTSC (3.58)	M
SECAM	B/G
SECAM	D/K

Suggested Colour / Sound Systems		
Destination	**Colour System**	**Sound System**
Singapore	PAL	B/G
Hong Kong	PAL	I
Middle East	SECAM	B/G, D/K
New Zealand	PAL	B/G
Australia	PAL	B/G
India	PAL	B/G
South Africa	PAL	I

Note
For Operating Voltage, Frequency, Power Consumption and Version Number, refer to the type number at the rear of the set.

4. Mechanical instructions

4.1 Connect the ComPair cable

1. Connect the ComPair cable to connector 0229 (located left from the 'rear cinch connectors').
2. Start ComPair and perform the diagnosis (for more info see chapter 5).

4.2 Remove the rear cover

1. Remove all the fixation screws of the rear cover.
2. Now remove the rear cover.

4.3 Service positions

4.3.1 Service positions of the Large Signal Panel (LSP)

Position 1: For better accessibility of the LSP, do the following:
1. Remove the LSP-bracket from the bottom tray by pulling it backwards.
2. Hook the bracket in the first row of fixation holes of the cabinet bottom. In other words reposition the bracket from [1] to [2].

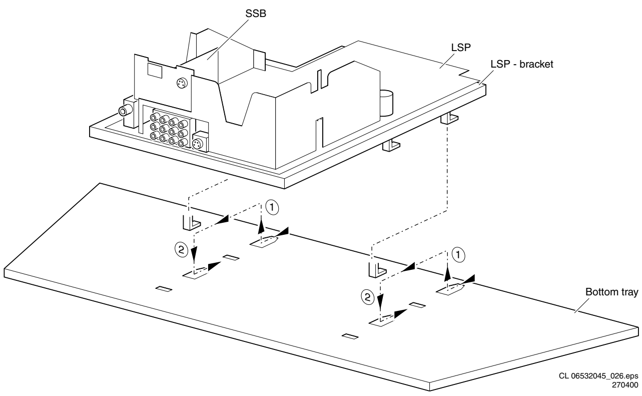


Figure 4-1

Position 2: To get access to the bottom side (solder side) of the LSP, do the following:
1. Disconnect the degaussing coil from the LSP by removing the cable from connector 0211 [1].
2. Release some of the wiring from their fixation clamps, in order to get room for repositioning the LSP.
3. Turn the chassis tray 90 degrees counter clockwise [2].
4. Flip the tray with the rear I/O panel towards the CRT [3].
5. Place the hook of the tray in the fixation hole at the right side of the cabinet bottom [4] and pull the chassis tray forward.

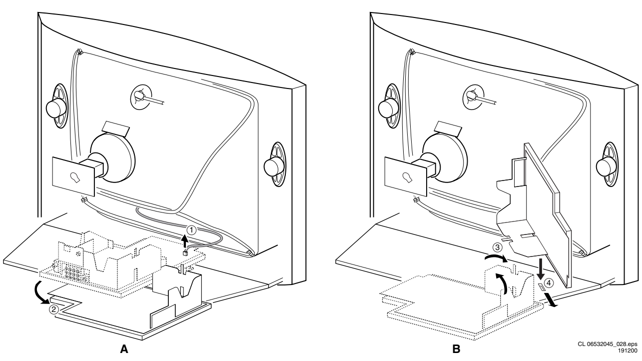


Figure 4-2

4.3.2 Service position of the Small Signal Board (SSB)

All relevant test points can be accessed with the SSB in its original position, but for ease of use a 'SSB extension board' is available under number 9965 000 05769.
Before usage of this board, first the 'SSB top-bracket' has to be taken out:
1. Put the LSP in service position 1 (as described earlier).
2. **Carefuly** release the 2 fixation clamps [1].
3. Lift the 'SSB top-bracket' from the cooling plate [2].

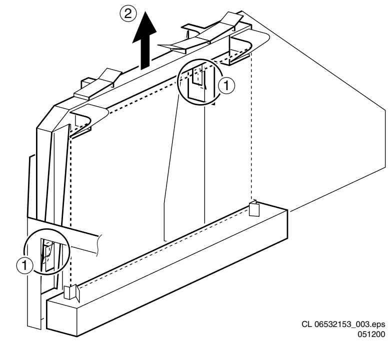


Figure 4-3

Than the complete panel must be taken out from the SIMM-connector.
Therefor release the 2 metal clamps [2] at both sides of the SIMM-connector and take the complete SSB out (it 'hinges' in the SIMM-connector).

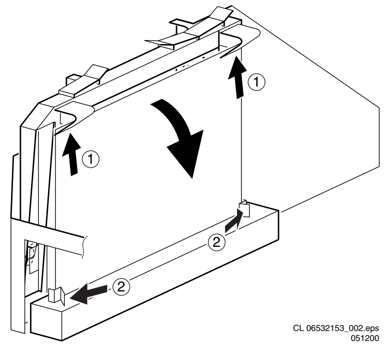


Figure 4-4

4.3.3 Removing the Top Control panel

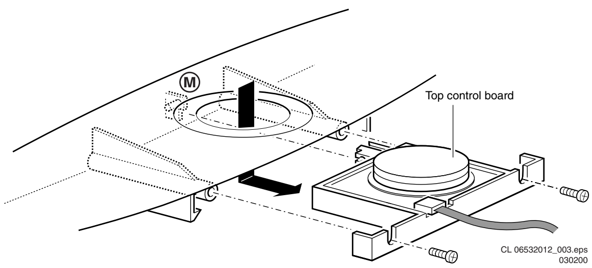


Figure 4-5

1. Remove the two fixation screws, which hold the panel.
2. Pull the board backward (w.o.w. release it from the front hinge).
3. Lift the board out of its bracket after releasing the 2 fixation clamps (at the connector side).

4.3.4 Removing the Side I/O module

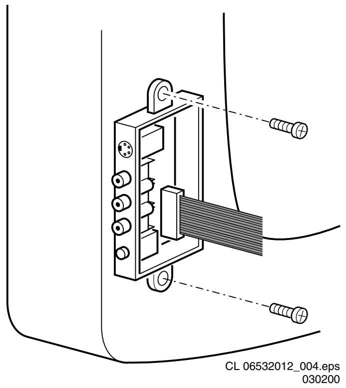


Figure 4-6

1. Remove the complete Side I/O-assembly after unscrewing the 2 fixation screws.
2. Lift the board from its bracket after releasing the 2 fixation clamps.

4.3.5 Removing front interface

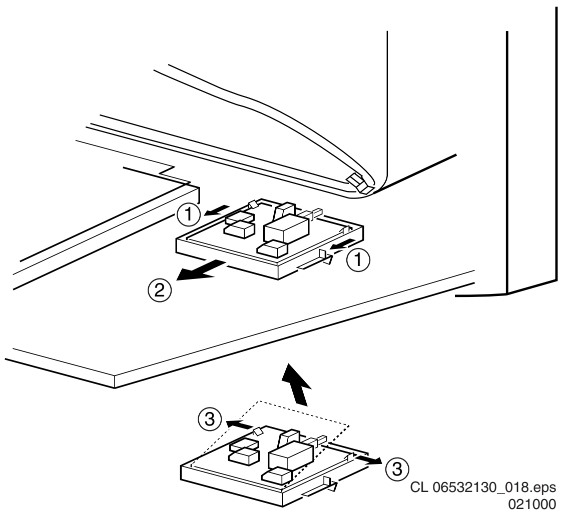


Figure 4-7

1. Release the two fixation clamps [1] by pushing them upward.
2. At the same time, the complete assy must be pulled backward [2].
3. If the board has to be removed, release the 2 clamps at the sides of the bracket and lift panel out [3].

Note: In case the clamps break off, the module can be mounted to the cabinet with 2 standard cabinet screws

4.3.6 Removing the PIP/DW/Guide+ module

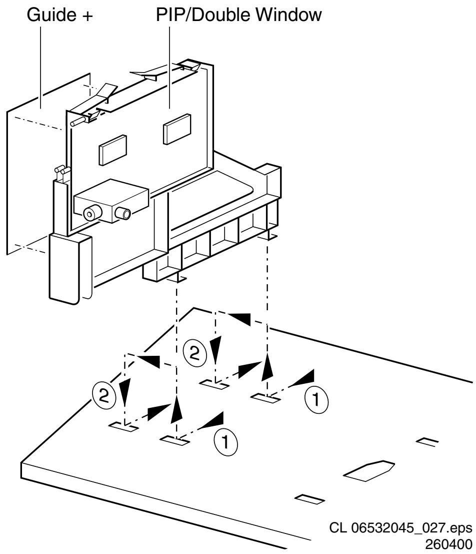


Figure 4-8

1. Remove the module bracket from the bottom tray by pulling it backward.
2. Hook the bracket in the first row of the cabinet bottom. In other words reposition the bracket from [1] to [2] (see figure above).

4.3.7 Removing the PIP/DW-panel

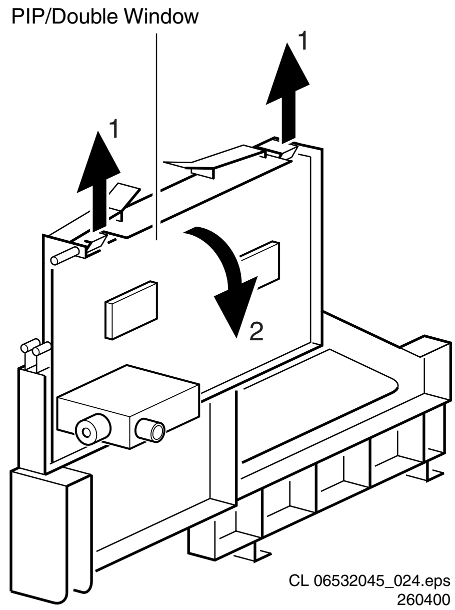


Figure 4-9

Lift the board out of its bracket after releasing the 2 fixation clamps.

4.3.8 Removing the DC-shift/DAF panel

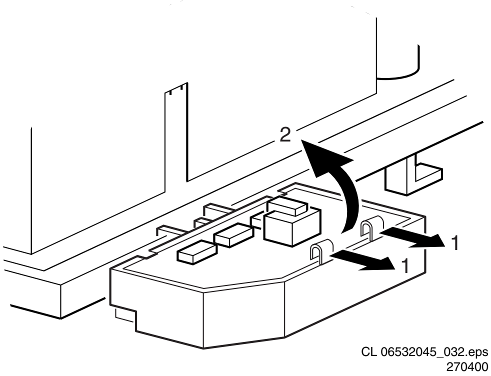


Figure 4-10

1. The complete module can be removed from the LSP-bracket by pressing its fixation clamp (located at the height of connector 0233, **on the LSP-bracket**), while sliding the module in the direction of the CRT.
2. The board can easily be lifted out [2] of the bracket after releasing the 2 fixation clamps [1].

4.3.9 Removing the Mains Harmonic panel (if present)

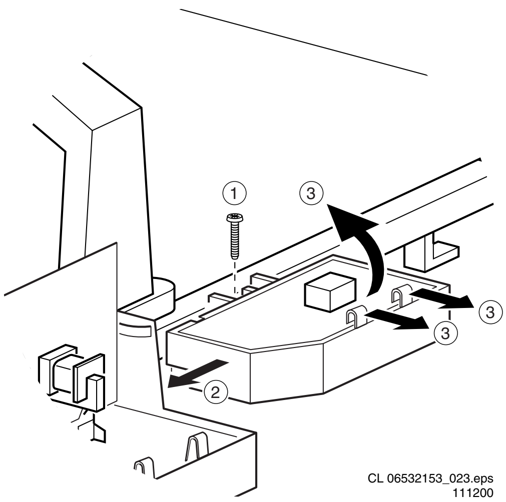


Figure 4-11 (figure can deviate slightly)

1. Remove the complete module from the LSP-bracket after removal of the fixation screw [1] and slide it in the opposite direction of the CRT [2].
2. Lift the board from its bracket after releasing the 2 fixation clamps [3].

4.4 Mounting the rear cover

Before mounting the rear cover, perform the following checks:

- Check whether the mains-cord is mounted correctly in its guiding brackets.
- Check whether all cables are in their original position.

5. Fault finding and repair tips

This chapter consists of the following paragraphs:
1. Test points.
2. Service Modes.
3. Problems and solving tips (related to CSM).
4. ComPair.
5. Error codes.
6. The 'blinking LED' procedure.
7. Repair tips.

5.1 Test points

The A10 chassis is equipped with test points in the service printing. These test points are referring to the functional blocks:
- A1-A2-A3, etc.: Test points for the audio processing circuitry [A6, C6]
- C1-C2-C3, etc.: Test points for the control circuitry [C8]
- F1-F2-F3, etc.: Test points for the frame drive and frame output circuitry [A3] and Double Window
- I1-I2-I3, etc.: Test points for the intermediate frequency circuitry [A4, C1]
- L1-L2-L3, etc.: Test points for the line drive and line output circuitry [A2]
- P1-P2-P3, etc.: Test points for the power supply [A1]
- S1, S2, S3, etc.: Test points for the synchronisation circuitry [C1]
- V1-V2-V3, etc.: Test points for the video processing circuitry [B, C2, C3]

The numbering is done, in a for diagnostics logical sequence; always start diagnosing within a functional block in the sequence of the relevant test points for that functional block.

Measurements are performed under the following conditions:
- Service mode: SDM.
- Video: colour bar signal.
- Audio: 3 kHz left, 1 kHz right.

5.2 Service modes

5.2.1 Service Default Mode (SDM)

Purpose
- To provide a situation with predefined settings to get the same measurement results as given in this manual.
- Start the 'Blinking LED' procedure.
- Have the possibility to override the 5V-protection.

Specification
- Tuning frequency 475.25 MHz for PAL/SECAM sets or at channel 3 (61.25 MHz) for NTSC-sets.
- All picture settings at 50 % (brightness, colour, contrast, hue).
- All sound settings at 50 % except volume at 25 % (so bass, treble, balance at 50 %, volume at 25 %).
- All service-unfriendly modes are disabled, like timer, sleep timer, parental lock, blue mute, hospitality mode and no-ident timer (normally the set is automatically switched off when no video signal - IDENT - was received for 15 minutes).

Entering
- Enter via a standard RC-handset the code '062596' followed by the 'MENU' button.
- Via ComPair.
- Via grounding the 'Front Detect'-line **during switch ON** (shorting pins 1 and 7 of the Side I/O connector 0936 or jumpers 9261 and 9262 on the LSP).
- By the 'DEFAULT' button on the DST while the set is in the normal operation mode.

CAUTION: Entering SDM by grounding the 'Front Detect'-line will override the 5V-protection. **This should only be done for a short period of time.** In case of SW-protections (errors 1 - 4), the set will shutdown in 15 s.
When doing this, the service-engineer must know what he is doing as it could lead to damaging the set.

After entering SDM, the following screen will be shown with 'SDM' at the upper right side for recognition.

SDM Menu

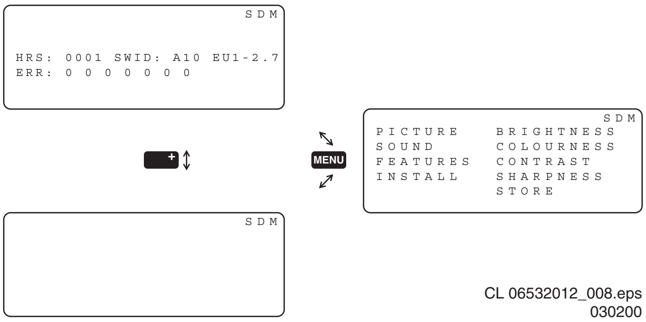


Figure 5-1

Explanation

Access to normal user menu
Pressing the 'MENU' button on the remote control, switches between the SDM and the normal user menus (with the SDM mode still active in the background).

Error buffer
Pressing the 'OSD' button [i+] of the remote control, shows / hides the error buffer. OSD can be hidden to prevent interference with oscillogram measurements.

Access to SAM
By pressing the 'VOLUME +' and 'VOLUME -' buttons on the local keyboard **simultaneously for a few seconds**, the set toggles from SDM to SAM.

Exiting
There are 2 ways to exit this mode:
- Switch the set to 'STANDBY', the error buffer will also be cleared (by switching the set OFF-ON with the mains switch, the set will come up again in the SDM).
- By pressing the 'EXIT' button on the DST.

5.2.2 Service Alignment Mode (SAM)

Purpose
- To perform alignments.
- To change option settings.
- To display / clear the error code buffer.

Specification
- Software alignments (see chapter 8).
- Option settings (see chapter 8).
- Error buffer reading and erasing. The most recent error code is displayed on the left side.
- Operation counter.
- Software version.

Entering

- Enter via a standard RC-handset the code '062596' followed by the 'OSD' button [i+].
- Via ComPair.
- By the 'ALIGN' button on the DST while the set is in the normal operation mode.

The following screen will be shown, with 'SAM' at the upper right side for recognition.

SAM Menu

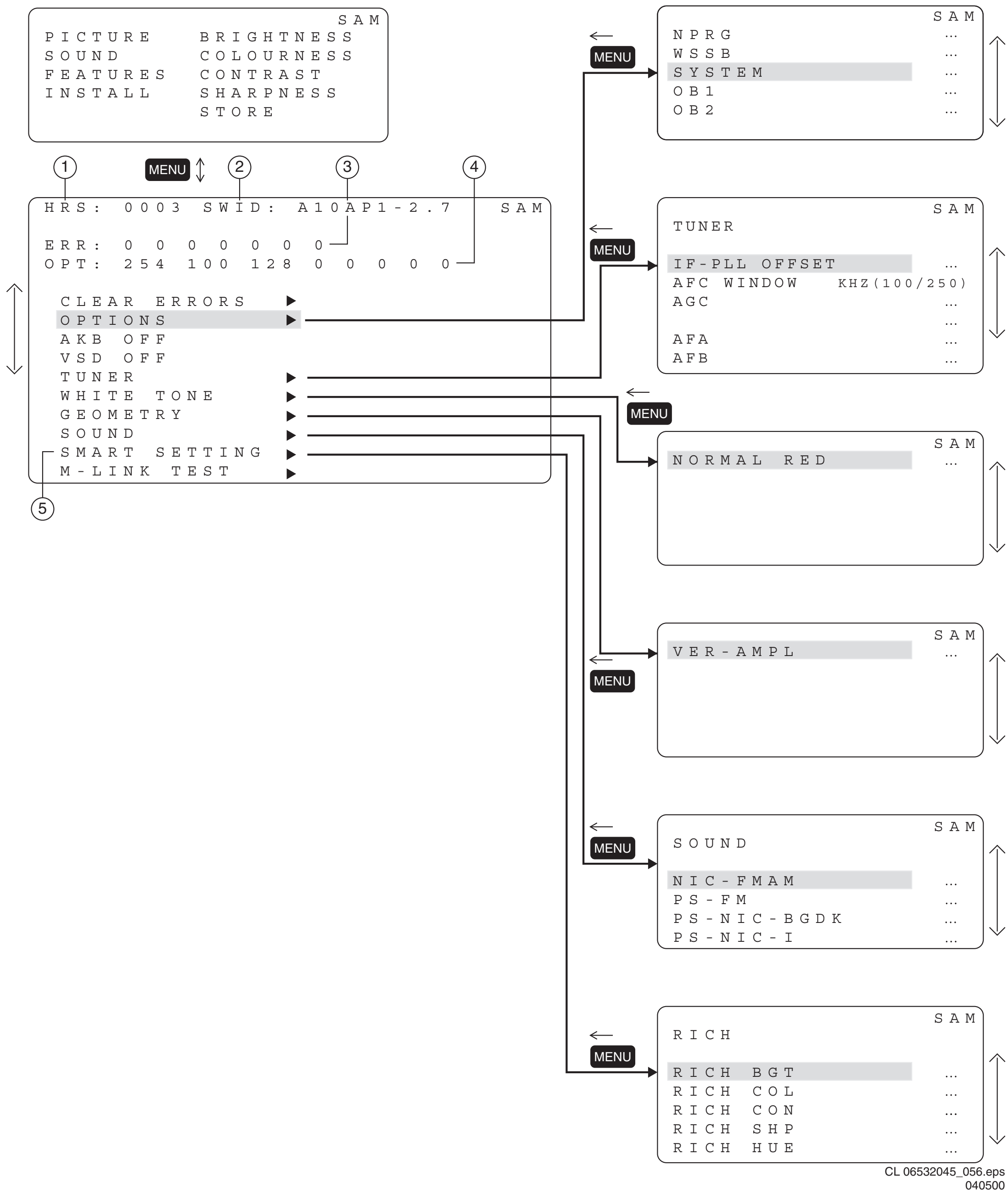


Figure 5-2

Explanation

The Service Alignment Mode menu will now appear on the screen. The following information is displayed:

1. Operation hours timer (hexadecimal).
2. Software identification of the main micro controller (A10BBC-X.Y).
   - A10 is the chassis name.
   - BBC is 2 letter and 1 digit combination to indicate the software type and the supported languages.
   - X = main version number.
   - Y = subversion number.
3. Error buffer (7 errors possible).
4. Option bytes (8 codes possible), summary of options are explained further on.
5. Sub menus are listed in a scroll-menu.

Menu control

Menu items can be selected with the 'CURSOR UP/DOWN' key. The selected item will be highlighted. When not all menu items fit on the screen, moving the 'CURSOR UP/DOWN' will display the next/previous menu items.

With the 'CURSOR LEFT/RIGHT' keys, it is possible to:

- (De)activate the selected menu item (e.g. GEOMETRY).
- Change the value of the selected menu item (e.g. VER-SLOPE).
- Activate the selected submenu (e.g. SERV-BLK).

Access to normal user menu

Pressing the 'MENU' button on the remote control switches between the SDM and the normal user menus (with the SAM

mode still active in the background). Pressing the 'MENU' key in a submenu will go to the previous menu.

The menus and submenus

- CLEAR ERRORS. Erasing the contents of the error buffer. Select the CLEAR ERRORS menu item and press the 'CURSOR RIGHT' key. The content of the error buffer is cleared.
- The functionality of the OPTIONS and ALIGNMENTS (TUNER, WHITE TONE, SOUND, GEOMETRY and SMART SETTING) sub menus is described in chapter 8.

Exiting

There are 2 ways to exit this mode:

- Switch the set to 'STANDBY', the error buffer will NOT be cleared (by switching the set OFF-ON with the mains switch, the set will come up again in the SAM).
- By pressing the 'EXIT' button on the DST.

5.2.3 Customer Service Mode (CSM)

Purpose

The 'Customer Service Mode' is a special service mode, which can be activated and deactivated by the customer upon request of the service technician/dealer during a telephone conversation, in order to identify the status of the set. This CSM is a 'read only' mode, therefore modifications in this mode are not possible.

Entering

The Customer Service Mode will switch ON after pressing the 'MUTE' key on the remote control handset and any of the top control buttons on the TV for at least 4 seconds simultaneously. This activation only works if there is no menu on the screen.

Explanation

After switching on the Customer Service Mode the following screen will appear:

CSM Menu

```
                                          CSM
1  HRS: 0005 SWID: A10US1-2.7
2  CODES: 0 0 0 0 0 0 0
3  OPT: 254 100 128 0 0 0 0 0
4  SYSTEM: EUROPE     11 SOUND: MONO
5  NO SIGNAL          12 VOLUME:          ...
6                     13 BALANCE:   +/- ...
7                     14 HUE:       +/- ...
8                     15 COLOUR:          ...
9                     16 BRIGHTNESS:      ...
10 SOURCE: 1          17 CONTRAST:        ...
```

CL 06532045_041.eps
020500

Figure 5-3

Line 1:
HRS: *Hexadecimal* counter of operating hours.
Example: 1B (hex) => 0001 1011 (bin) => 27 hrs. (dec).
Standby hours are not counted as operating hours.
SWID: Software identification of the main micro controller (see paragraph 5.2.2). Details on available software versions can be found in the chapter 'Software Survey' of the quarterly publication 'Product Survey - Colour Television'.

Line 2:
Error code buffer (for more details see paragraph 5.5). Displays the last 7 errors of the error code buffer.

Line 3:
Software and hardware functionality is controlled by option bits. An option byte or option number represents 8 of those bits. Each option number is displayed as a decimal number between 0 and 255. The set may not work properly when an incorrect option code is set. See chapter 8.4 for more information on correct option settings

Line 4:
Indicates which colour and sound system is installed for the selected pre-set:

Line 5:
Indicates that the set is not receiving an 'ident' signal on the selected source.
Note: On some models, BLUE MUTE is displayed (if the BM option is ON) when no signal is received.

Line 6:
Indicates whether the SLEEPTIMER function is ON/OFF.

Line 7:
Indicates whether the CHILD LOCK function is ON/OFF.

Line 8:
Indicates whether the current pre-set is defined as SKIPPED or NON-PREFERRED.

Line 9:
Indicates whether the HOTEL MODE is activated (when present).

Line 10:
Indicates which SOURCE is installed for this pre-set: EXT1, SVHS2, EXT2 or Tuner.

Line 11:
Indicates which sound mode is installed for this pre-set: Mono, NICAM, Stereo, L1, L2, SAP, Virtual or Digital.

Line 12 to 17:
Value indicates parameter levels at CSM entry.

Exiting

The Customer Service Mode will switch OFF after pressing any key of the remote control handset (with exception of the 'P+' and 'P-' keys) and switching OFF the TV set with the mains switch.

5.3 Problems and solving tips (related to CSM)

5.3.1 Picture problems

Picture too dark or too bright

- Press “Smart Picture” button on the remote control. In case the picture improves, increase / decrease the brightness value or increase / decrease the contrast value. The new “Personal Preference” value is automatically stored after 3 minutes
- After switching on the Customer Service Mode the picture is OK. Increase / decrease the brightness value or increase / decrease the contrast value. The new “Personal Preference” value is automatically stored after 3 minutes

White line around picture elements and text

- press “Smart Picture” button on the remote control. In case the picture improves, decrease the sharpness value. The new “Personal Preference” value is automatically stored after 3 minutes
- after switching on the Customer Service Mode the picture is OK. Decrease the sharpness value. The new “Personal Preference” value is automatically stored after 3 minutes

Snowy picture

Check CSM line 5. If this line indicates NO SIGNAL, check following:

- no or bad antenna signal; connect a proper antenna signal

- antenna not connected; connect the antenna
- no channel / pre-set is stored at this program number; go to the INSTALL menu and store a proper channel at this program number
- the tuner is faulty (in this case the CODES line will contain number 13 or 16); check the tuner and replace/ repair if necessary

Snowy picture and/or unstable picture
- a scrambled or decoded signal is received

Black and white picture
- press “Smart Picture” button on the remote control. In case picture improves, increase the colour value. The new “Personal Preference” value is automatically stored after 3 minutes
- after switching on the Customer Service Mode the picture is OK. Increase the colour value. The new “Personal Preference” value is automatically stored after 3 minutes

Menu text not sharp enough
- press “Smart Picture” button on the remote control. In case the picture improves, decrease the contrast value. The new “Personal Preference” value is automatically stored after 3 minutes
- after switching on the Customer Service Mode the picture is OK. Decrease the contrast value. The new “Personal Preference” value is automatically stored after 3 minutes

5.3.2 Sound problems

No sound or sound too loud (after channel change or switching on)
- after switching on the Customer Service Mode the volume is OK. Increase / decrease the volume level. The new “Personal Preference” value is automatically stored after 3 minutes

5.3.3 Other problems

TV switched off or changed without any user action
Set switches off after “TV SWITCHING OFF” was displayed
Auto standby switched the set off because:
- there was no ident signal for more than 15 minutes
- there was no remote control signal received or local key pressed for > 2 hours

See chapter 8 for a description on the options to enable/ disable auto standby.

5.4 ComPair

5.4.1 Introduction

ComPair (Computer Aided Repair) is a service tool for Philips Consumer Electronics products. ComPair is a further development on the DST service remote control allowing faster and more accurate diagnostics. ComPair has three big advantages:
1. ComPair helps you to quickly get an understanding how to repair the TV-set in a short time, by guiding you step by step through the repair procedures.
2. ComPair allows very detailed diagnostics (on I^2C level) and is therefore capable of accurately indicating problem areas. You do not have to know anything about I^2C commands yourself; ComPair takes care of this.
3. ComPair speeds up the repair time since it can automatically communicate with the TV (when the microprocessor is working) and all repair information is directly available. When ComPair is installed together with the SearchMan electronic manual, schematics and PWBs are only a mouse-click away.

ComPair consists of a Windows based faultfinding program and an interface box between PC and the (defective) product. The ComPair interface box is connected to the PC via a serial or RS232 cable. In case of the A10A chassis, the ComPair interface box and the TV communicate via a bi-directional service cable via the service connector at the rear side of the set (located at the left side of the rear cinch connectors, see also figure 1-2, chapter 1).
The ComPair faultfinding program is able to determine the problem of the defective television. It can gather diagnostic information in 2 ways:
1. Communication with the television (automatic).
2. Asking questions to you (manually).

ComPair combines this information with the repair information in its database to find out how to repair the TV-set.

Automatic information gathering
ComPair can automatically read out the contents of the entire error buffer.
Diagnosis is done on I^2C level. ComPair can access the I^2C bus of the television. ComPair can send and receive I^2C commands to the micro controller of the television. In this way it is possible for ComPair to communicate (read and write) to devices on the I^2C busses of the TV-set.

Manual information gathering
Automatic diagnosis is only possible if the micro controller of the television is working correctly and only to a certain extend. When this is not the case, ComPair will guide you through the faultfinding tree by asking you questions and showing you examples. You can answer by clicking on a link (e.g. text or a waveform picture) that will bring you to the next step in the faultfinding process.

A question could be: *Does the screen give a picture? (Click on the correct answer) YES / NO.*

An example can be: *Measure test-point I7 and click on the correct oscillogram you see on the oscilloscope*

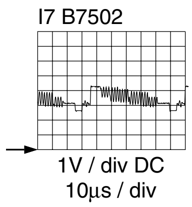


Figure 5-4

By a combination of automatic diagnostics and an interactive question/answer procedure, ComPair will enable you to find most problems in a fast and effective way.

Additional features
Beside fault finding, ComPair provides some additional features like:
- Uploading/downloading of pre-sets.
- Managing of pre-set lists.
- Emulation of the Dealer Service Tool.

5.4.2 SearchMan (Electronic Service Manual)

If both ComPair and SearchMan are installed, all the schematics and the PWBs of the faulty set are available when clicking on the hyper-link of a schematic or a PWB in ComPair.

Example: *Measure the DC-voltage on capacitor C2568 (Schematic/Panel) at the Monocarrier.*
Clicking on the PWB hyper-link automatically shows the PWB with a highlighted capacitor C2568. Clicking on the schematic hyper-link automatically shows the position of a highlighted capacitor at the schematic.

5.4.3 Connecting the ComPair interface

The ComPair Browser software should be installed and set-up before connecting the ComPair interface to the TV-set (see the ComPair Browser Quick Reference Card for installation instructions).

1. Connect the RS232 interface cable to a free serial (COM) port on the PC and the ComPair interface PC connector (connector marked with 'PC').
2. Connect the mains adapter to the connector marked 'POWER 9V DC' on the ComPair interface.
3. Switch the ComPair interface 'OFF'.
4. Switch the television set 'OFF' with the mains switch.
5. Connect the interface cable to the connector on the rear side of the ComPair interface that is marked 'I^2C' (see figure below).
6. Connect the other end of the interface cable to the ComPair connector on the monocarrier (left to the rear cinch connectors).
7. Plug the mains adapter in the mains outlet and switch 'ON' the interface. The green and red LEDs light up together. The red LED extinguishes after approx. 1 second (the green LED remains lit).
8. Start-up ComPair and select 'File' menu, 'Open...:; select 'A10A Fault finding' and click 'OK'.
9. Click on the icon to switch 'ON' the communication mode (the red LED on the ComPair interface will light up).
10. Switch 'ON' the TV-set with the mains switch.
11. When the set is in standby, click on 'Start-up in ComPair mode from standby' in the ComPair A10A faultfinding tree, otherwise continue.

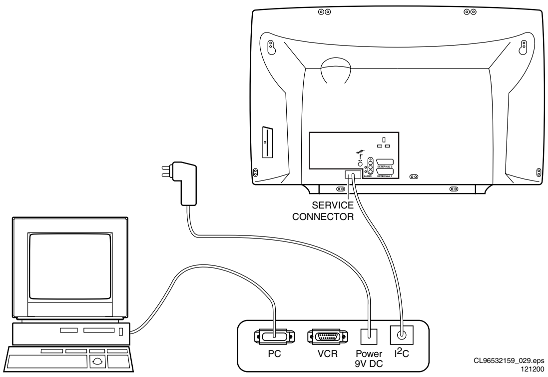


Figure 5-5

The set has now started up in ComPair mode. Follow the instructions in the faultfinding tree to diagnose the set. Note that the OSD works but that the actual user control is disabled.

5.4.4 Pre-set installation

Pre-sets can be installed via the service cable:

- 'sending to' and 'reading from' the television.
- the rear cover does NOT have to be removed.

Click on '**File**', '**Open**' and select '**A10A fault finding'** to use the cable.
Pre-sets can be installed via menu '**Tools**', '**Installation**' and '**Pre-sets**'.

5.4.5 Ordering ComPair

ComPair order codes:

- Starter kit ComPair- + SearchMan software + ComPair interface (excluding transformer): 4822 727 21629.
- ComPair interface (excl. transformer): 4822 727 21631.
- Starter kit ComPair software: 4822 727 21634.
- Starter kit SearchMan software: 4822 727 21635.
- Starter kit ComPair- + SearchMan SW: 4822 727 21636.
- ComPair CD (update): 4822 727 21637.
- SearchMan CD (update): 4822 727 21638.
- ComPair interface cable (for A10A): 4822 727 21641.

5.5 Error codes

5.5.1 Error buffer

The error buffer contains all errors detected since the last time the buffer was erased and is written from left to right. When an error occurs that is not yet in the buffer, the error is written at the left side and all other errors shift one position to the right.
The error buffer will be cleared in the following cases:

- By activating 'CLEAR ERRORS' in SAM menu.
- Exiting SDM or SAM with the 'Standby' command on the remote control.
- Transmitting the commands 'DIAGNOSE' '99' 'OK' with the DST (RC7150) or with ComPair.
- Automatical reset if the contents have not changed for 50 hours.

By leaving SDM or SAM with the mains switch, the error buffer is not reset.

Examples:
ERROR: 0 0 0 0 0 0 0 : No errors detected

ERROR: 6 0 0 0 0 0 0 : Error code 6 is the last and only detected error

ERROR: 9 6 0 0 0 0 0 : Error code 6 was first detected and error code 9 is the last detected (newest) error

The contents of the error buffer can also be made visible through the 'blinking LED' procedure. This is especially useful when there is no picture (explained further on).

5.5.2 Error codes

In case of non-intermittent faults, clear the error buffer before starting the repair, this to prevent that 'old' error codes are present.

If possible check the entire content of the error buffers. In some situations an error code is only the result of another error code (and not the actual cause).

Note: a fault in the protection detection circuitry can also lead to a protection.

Error code	Error description	Possible defective components
0	No error detected	-
1	EW and/or High beam protection active	LOT, Line deflection circuit, EW-circuit or CRT amplifier circuit, picture tube or +200V missing
2	Vertical protection	Vertical circuit is defective
3	X-ray protection active	USA only
4	5V protection active	+5V supply line is low or short circuit
5	Reserved	-
6	General I^2C bus error	I^2C-bus short- or open circuit on uP
7	BC-loop not stabilised	RGB amplifiers, RGB guns or RGB driving signals of BOCMA
8	BOCMA - I^2C error	item 7301 on diagram C1 (IC TDA888x)
9	BOCMA 8V supply failure	item 7301 on diagram C1 and/or R3331
10	NVM I^2C error	item 7066 on diagram C3 (IC M24C32)
11	NVM identification failure	item 7066 on diagram C3 (IC M24C32)
12	uProcessor internal RAM test failure	item 7064 on diagram C3 (IC SAA5667)
13	Main Tuner - I^2C error	Item 1225 on diagram A4 (UV13xx)
14	Sound processor - I^2C error	item 7651 on diagram C5 (IC MSP34xxx)
15	SRAM test error	item 7070 on diagram C4 (IC UPD431000A)
16	Second Tuner - I^2C error	Item 1900 on diagram L1 (USA only) or 7201 on diagram F2
17	PIP IC I^2C error or DW IC - I^2C error	item 7803 on diagram L2 (USA only) or 7801 on diagram F1
18	I/O expander IC- I^2C error	item 7910 on diagram L1 (USA only) or 7403 on diagram F3
19	Guide$^+$ - I^2C error	item 7005 on diagram K1 (IC LC27016B) - USA only
20	V-chip for PIP - I^2C error	item 7501 on diagram F5 (IC Z86130) - USA only
21	NV clock - I^2C error	item 7011 (IC MK41T56) - LATAM only
22	Reserved	-
23	Second BOCMA IC on DW panel - I^2C error	item 7301 on diagram F4 (IC TDA888x)

Explanation of the error codes:

Error 0
No error

Error 1
Set is switched to protection; error code 1 is placed in the error buffer; the LED will blink 1 time (repeatedly). If this happens, isolate each circuit to determine the cause:

- EW protection - PROT-UP
  If this protection is active, the causes could be one of the following;
  - bad contacts of:
    - horizontal deflection coil
    - linearity coil 5417
    - S-correction capacitor 2418/2419
    - flyback capacitor 2414/2416
    - line output stage
  - short circuit of:
    - flyback diode 6414
    - EW transformer (bridge coil) 5478/5479 or 5474/5475/5476 (version dependent)
    - EW driver 7470
- High beam current protection - IBeam
  As the name implies, the cause of this protection is a too high beam current (bright screen with flyback lines). Check whether the +200 V supply to the CRT panel is present. If the voltage is present, the most likely cause is the CRT panel or the picture tube. Disconnect the CRT panel to determine the cause. If the +200 V voltage is not present, check R3840 at the CRT-panel and R3445 & D6445 at the main panel.

Error 2
If this protection is active, the cause could be one of the following (most likely in the vertical output stage):

- 7501 is faulty.
- poor contact or open circuit of deflection coil.
- +13V-VERT and/or -13V not present.

Error 3
X-Ray protection - PROTN
If this protection is active, the most likely cause is the LOT. Detection via pin 3 of the BOCMA (7301) AND pin 5 of the µP (7064)

Error 4
The 5V-protection active and error code 4 is placed in the error buffer. The LED will blink 4 times (repeatedly).
A 5 V failure can cause a drop in the 5 V supply output, resulting in an undefined behaviour of the set. Therefore, all I^2C devices connected to the 5V-supply are constantly monitored. When none of these devices respond to the micro controller for a prolonged time, the micro controller assumes that there is a failure in the 5V-supply.

By starting up the set with the service jumpers shorted, the 5V-protection is disabled and it is easier to determine the cause. +5V protection will be activated when these I^2C devices fail (no I^2C communication):

- Main Tuner 1125 on main panel.
- ITT sound processor MSP34xx (7064) on the SSB.

The following tips are useful to isolate the problem area after overriding the +5V-protection. Determine whether:

1. The +5V source is working properly; isolate coil 5430 and jumper 9044 and measure the +5V.
2. ITT sound processor circuit is loading the +5V; isolate coil 5430.
3. The tuner is loading the +5V source; isolate jumper 9044.
4. Main tuner circuit is loading the +5V source; isolate coil 5261.

Caution! Overriding the 5V-protection when there is a 5V failure can increase the temperature in the set and may cause permanent damage to components. Do not override the 5V-protection for a prolonged time.

Error 5
Reserved.

Error 6
This will occur in the following cases:

- SCL or SDA is shorted to ground.
- SCL is shorted to SDA.
- SDA or SCL connection at the micro controller is open circuit.

Error 7
Black current loop instability protection.
The possible cause could be a defect in one or more of the RGB amplifiers, RGB guns or RGB driving signals. The detection is via the black current feedback loop to pin 30 of the BOCMA (item 7301).

Error 8
BOCMA (item 7301 on SSB) is corrupted, the I^2C line to the BOCMA is low or no supply voltage is present at pin 14 and/ or pin 60 (3V3).

Error 9
No supply voltage at pin 53. Check NFR 3331 and coil 5333.

Error 10
NV memory (EEPROM - item 7066) does not respond to the micro controller.

Error 11
During the last start-up, the NVM and the micro controller did not recognize each other (e.g. one of them was replaced or the NV memory has been changed, adapted or lost). Therefore the NVM was loaded with default values.

Error 12
Microprocessor (Painter - item 7064) internal RAM test failure.

Error 13
Tuner (item 1225) is corrupted, the I^2C line to the tuner is low or no supply voltage at pin 6, 7 or 9 of the tuner.

Error 14
Sound controller MSP34xx does not respond to the micro controller.

Error 15
SRAM IC test failure (item 7070).

Error 16
PIP/DW Tuner I^2C error. The tuner (TEDE9 - item 7201) on DW-panel does not respond to the micro controller.

Error 17
PIP IC I^2C failure (item 7801) or Double Window IC I^2C failure.

Error 18
I/O expander IC I^2C failure (item 7910 on PIP panel or item 7403 on DW panel).

Error 19
Guide+ I^2C failure (item 7005). Only for USA.

Error 20
V-chip IC I^2C failure. Only for USA.

Error 21
NV clock IC I^2C failure at mono board (item 7011). Only for LATAM.

Error 22
Reserved.

Error 23
2nd BOCMA IC (item 7301on DW panel) I^2C communication failure.

Error 24 - 29
Reserved.

Note: Error codes 1, 2 and 4 are protections, so in these cases, the voltage supply to some circuits will be switched off. Also the LED will blink the number of times equivalent to the most recent error code.

5.6 The 'blinking LED' procedure

The contents of the error buffer can also be made visible through the 'blinking LED' procedure. This is especially useful when there is no picture.

When the SDM is entered, the LED will blink the contents of the error-buffer. Error-codes $\geq$ 10 are shown as follows:
A long blink of 750 msec. which is an indication of the decimal digit, followed by a pause of 1500 msec, followed by n short blinks.
When all the error-codes are displayed, the sequence is finished with a LED display of 3 seconds. Then the sequence starts again.

Example:
Error code position 1 2 3 4 5
Error buffer: 12 9 6 0 0

After entering SDM: 1 long blink (750 ms) - pause (1.5 s) - 2 short blinks - pause (3 s) - 9 short blinks - pause (3 s) - 6 short blinks - pause (3 s) - long blink (3 s) - etc.

Note: If errors 1, 2 or 4 occur, the LED ***always*** gives the last occurred error, even if the set is NOT in service mode.

5.7 Repair tips

In this paragraph some trouble shooting tips for the deflection and power supply circuitry are described.

5.7.1 The deflection circuit

Measure if the V_{BAT} (140 V) is present across components 2939 and/or 2940 (diagram A1).
If the voltage is not present, disconnect jumpers 9936 and 9937. The whole 'Line Deflection' stage is now disconnected. If the voltage is present then the problem might be caused by the deflection circuit. Either transistor 7410 is defective or the driver circuit around transistor 7481 is faulty or the 'horizontal drive' signal coming from the BOCMA IC 7301-pin 56 on the SSB is missing.

Note:

- When you short the collector and emittor of transistor 7410, hickup noise can be heard from the power supply circuit.
- To determine whether the fault is caused by the line deflection circuit (diagram A2) or by the E/W circuit (present when screen size > 21"), insert jumper into position number 9409 (in this case the E/W protection is disabled).
  If the basic deflection is working (picture is parabolic distorted), the fault must be searched for in the E/W circuit. If there is no horizontal deflection, the fault must be searched for in the deflection circuit.
- If any of the protection circuits in the 'Line output' stage are activated, the set will shut down. Depending on the protections, the LED will blink according to the fault defined.
  In order to determine which protection circuit is active, isolation of circuits is necessary.
  These protection circuits are:
  - High beam protection, see error 1.
  - X-ray protection, see error 1.
- If the 'High beam'- or 'X-ray' protection is active, the set will go to protection and the SDM will be activated.
  The 'service LED' blinks repetitively 1 time.
  If this happens, isolate each circuit to determine the cause.

5.7.2 The power supply

To trouble shoot the A10 SMPS, first check the +5V_STBY voltage on item 7968-pin 3 and 4. If this voltage is not present, check fuse 1961 and diode 6961.
If they are working properly, the problem might be caused by the circuit on the primary side of the switching transformer. Check in this case the output of the bridge diodes at the cathode of diode 6912, 6913 or 6915 for approximately 300 Vdc.
If this voltage is missing, check the bridge diodes and the fuse. If fuse 1900 is blown, measure IC7921 (diagram A1) between pins 3 and 2 to make sure that there is no short circuit present.
If the 300 Vdc is present on pin 3 of IC7902, check for a start-up voltage of 16 V on pin 4 of IC7921. If this voltage is not present, check if R3914 is open (a short circuit between pin 4 and 5 will also cause this problem). It is necessary, for the power supply, to have a feedback signal from the hot secondary side of the switch mode transformer (T5912-pin 8 and 9) to oscillate.
If this start-up voltage is present on pin 4 of IC7902 and the supply is not oscillating, check R3929 and D6929.

The A10 power supply has been designed with an Over Voltage Protection (OVP). To determined whether the OVP is active, check whether V_{BAT} (141 V) is present at IC7971 pin 1.
If not, check components D6938, C2939 and C2940 and L5941.
If they are OK, check the voltage at pin 3 of IC 7942.
If this voltage is not present, check fuse 1941 and fuse 1942.
If the voltage is present at pin 3, replace opto-coupler 7929.

Another way to confirm whether the OVP is active, is to measure the voltage with an oscilloscope at IC7902 pin 4.
If the voltage is fluctuating between 11 and 14 V, then check the components as described above.

Personal notes:

8. Alignments

Note: The Service Default Mode (SDM) and Service Alignment Mode (SAM) are described in chapter 5.

8.1 General alignment conditions

All electrical adjustments should be performed under the following conditions:

- Supply voltage: 110 / 220 V (± 10 %); 50 / 60 Hz (± 5 %)
- Warm-up time: ≈ 20 minutes
- The voltages and oscillograms are measured in relation to the tuner earth (with exception of the voltages on the primary side of the power supply). Never use the cooling fins / plates as ground.
- Test probe: Ri > 10 MΩ; Ci < 2.5 pF.
- Use an **isolated** trimmer / screwdriver for the alignments.

8.2 Electrical alignments

8.2.1 Vg2

Rough alignment

Using a pattern-generator displaying a black pattern.

1. Set brightness and contrast to minimum in a black room (OSD still visible). Select any of the AV-sources.
2. Go to the SAM.
3. Set VSD to ON.
4. Adjust Vg2 potmeter of LOT until the horizontal line is just visible.
5. Set VSD to OFF.
6. Exit SAM.

Fine adjustment

1. Activate the SAM-menu (see chapter 5.2.2). Go to the sub-menu 'WHITE TONE' and adjust the value of NORMAL RED, GREEN and BLUE to 40 (or 42 for 29" RF)
2. Go, via the MENU key, temporarely to the normal user menu and set the values of BRIGHTNESS and CONTRAST to 0.
3. Return to the SAM-menu via the MENU-key. Disable the black current loop by changing 'AKB' to 'OFF'.
4. Connect the RF-output of the pattern generator to the antenna-input. Test pattern is a 'black' pattern (blank screen on CRT **without** any OSD info).
   Set the time base of the oscilloscope to 0.5 ms with external triggering on the vertical pulse. Measure the black level pulse during the vertical flyback at the RGB cathodes of the CRT.

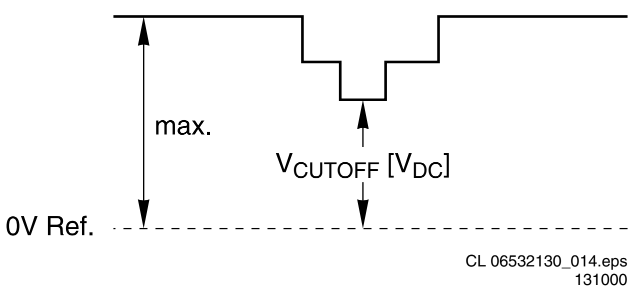


Figure 8-1

Adjust V_{cutoff} of the highest of the three guns (with the Vg2 potmeter of the LOT) to 165 V_{DC}.

8.2.2 Focus

1. Tune the set to a circle or crosshatch test pattern (use an external video pattern generator).
2. Adjust the 1st Focus potmeter (upper LOT potmeter) until the horizontal and vertical lines at 1/4 from east and west, at the height of the centre line, are of minimum width without visible haze.
3. Adjust the 2nd Focus potmeter (middle LOT potmeter) until the horizontal and vertical lines at 1/4 from north and south, at the height of the centre line, are of minimum width without visible haze.

Note:
For sets without Double Astigmatic Focus (DAF) panel, there is only one Focus-potmeter on the LOT.
Adjust according to paragraph 8.2.2 point 2.

8.3 Alignments and settings in the SAM.

8.3.1 General

With the software alignments of the Service Alignment Mode the Geometry, White tone and Tuner (IF) can be aligned. Put the set in the SAM mode. The SAM menu will now appear on the screen (see chapter 5).
Menu navigation is done with the 'CURSOR UP, DOWN, LEFT or RIGHT' keys of the RC-handset.

8.3.2 Geometry

The geometry alignments menu contains several items to align the set, in order to obtain a correct picture geometry.
In widescreen sets, the 'GEOMETRY SW' menu is available for separate alignments of the superwide (panorama) mode.

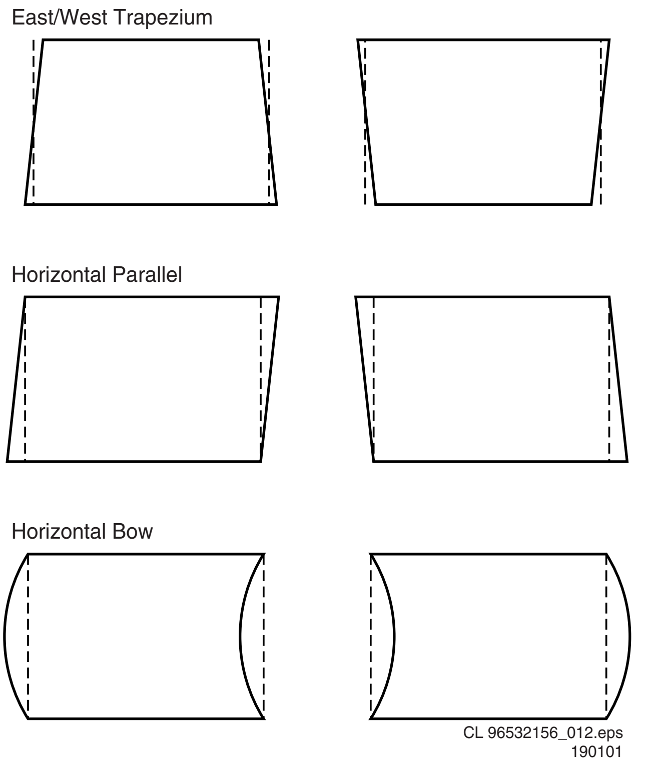


Figure 8-2

Initial set-up
1. Connect an external video pattern generator (PAL-475.25 MHz or NTSC-63.25 MHz) to the aerial input of the TV-set with a crosshatch test pattern.
2. Set 'Smart Picture' to NATURAL.
3. Activate the SAM-menu (see chapter 5).
4. Go to sub-menu GEOMETRY. Now the following alignments can be performed (dependent on execution):

Service blanking (SERV. BLK)
Switch the blanking of the lower half of the screen ON/OFF (to be used in combination with the vertical slope alignment).

Vertical slope (VER. SLOPE)
Align the vertical centre of the picture to the vertical centre of the CRT.This is the first alignment to be performed of the vertical alignments. For an easy alignment set SERV.BLK to ON.

Vertical S-correction (VER. SCOR)
Align the vertical linearity, meaning that vertical intervals of a grid-pattern must be equal over the entire height.

Vertical amplitude (VER. AMPL)
Align the picture height so that the complete test pattern is visible. Note that other vertical alignments are not compensated.

Vertical shift (VER. SHIFT)
Align the vertical centering so that the test pattern is located vertically in the middle. Repeat the 'vertical amplitude' alignment if necessary.

Horizontal shift (HOR. SHIFT)
Align the horizontal centre of the picture to the horizontal centre of the CRT.

Horizontal parallelogram (HOR. PARALLEL)
Align straight vertical lines in the top and the bottom; vertical rotation around the centre.

East West width (EW. WIDTH)
Align the picture width until the complete test pattern is visible.

East West Upper Corner (EW. UCORN)
Align straight vertical lines in the upper corners of the screen.

East West Lower Corner (EW. LCORN)
Align straight vertical lines in the lower corners of the screen.

East West Trapezium (EW. TRAP)
Align straight vertical lines in the middle of the screen.

East West parabola (EW. PARA)
Align straight vertical lines at the sides of the screen.

Horizontal bow (HOR. BOW)
Align straight horizontal lines in the top and the bottom; horizontal rotation around the centre.

8.3.3 Tuner (Large Signal Panel and Double Window)

IF PLL OFFSET and AFC WINDOW
No adjustments needed for these alignments. The default values for these options are:
– IF PLL OFFSET: 32
– AFC WINDOW: 100 kHz

AGC
Set an external pattern generator (e.g. PM5418) to a grey scale video signal and connect it to the aerial input with RF signal. Set the signal amplitude to at least 1 mV and to a frequency of 475.25 MHz for PAL or 63.25 MHz for NTSC.
– Activate the SAM-menu. Go to the sub-menu TUNER, select the sub-menu option AFC WINDOW and adjust the value to 100kHz.
– Select the AGC sub-menu
– Connect a DC multi-meter to pin 1 of the tuner 1225 (LSP) or 7200 (DW).
– Adjust the AGC until the voltage at pin 1 of the tuner is within 2.5 V < AGC takeover voltage < 3.8 V
– The value can be incremented or decremented by pressing the RIGHT/LEFT cursor keys on the RC.
– Switch the set to standby.

8.3.4 White tone

In the WHITE TONE sub menu, the colour values for the colour temperature values can be changed.
The colour temperature mode (NORMAL, DELTA COOL, DELTA WARM) or the colour (R, G, B) can be selected with the UP/DOWN cursor keys. The mode or value can be changed with the RIGHT/LEFT cursor keys.
First the values for the NORMAL colour temperature should be selected. Then the offset values for the DELTA COOL and DELTA WARM mode can be selected. Note that the alignment values are non-linear
0 represents the middle value (no offset difference).
- +1 to +63 represent a positive offset (63 is the maximum positive offset).
- -63 to -1 represent a negative offset (-63 is the minimum negative offset).

8.4 Options

8.4.1 Introduction

Options are used to control the presence/absence of certain features and hardware. The correct option values can be found on a sticker on the picture tube (after removal of the rear cover).

There are two ways to change the option settings (see also chapter 5):
1. Changing a single option:
   An option can be selected with the MENU UP/DOWN keys and its setting can be changed with the MENU LEFT/RIGHT keys.
2. Changing multiple options by changing Option Bytes:
   Changing the option bytes directly, makes it possible to set all options very fast. An option byte (OB1..8) can be selected with the MENU UP/DOWN keys and its setting can be changed with the MENU LEFT/RIGHT keys. An option byte represents a number of different options. All options are controlled via 8 option bytes. Select the option byte (OB1..OB8) and key in the new value.

Note:
Changes in the option byte settings are saved by selecting STORE and pressing the MENU RIGHT key. All changes are disregarded when the OPTION submenu is left without using the STORE command.
Some changes will only take affect after the set has been switched OFF and ON with the mains switch (cold start).

8.4.2 List of options

In the table below an overview is given of the possible options (in alphabetical order).
These option bits can be set ON (= 1) or OFF (= 0). If an option is set ON, it represents a certain value.
To calculate the Option Byte value (OB), add the values of the 8 option bits (see 8.4.3).

Option abbreviation	Feature description
AAVL	Automatic Volume Level
APC	Auto Picture Control
ASBY	Auto switch to STDBY after 2 hrs.
AUSB	Auto switch to STDBY after 2 hrs.
AV3	External 3 (Side I/O)
BLMU	Blue Mute
C169	Picture setting for Compress 16:9
CBFL	Comb Filter
CCAP	Closed Captioning
CHLK	Child Lock
CHNA	China
CVI	Ext. source selection for DW/PIP
DNRM	DNR Noise Reduction
DTXT	Dual page Teletext available
E149	Picture setting for Expand 14:9
FAPG	Favorite Page
HOSP	Hospitality mode
INCF	Internal Comb Filter
IPIX	Incredible Picture
IPMU	Incredible Picture via menu
ISUR	Incredible Surround
MLNK	M-Link
NTSC	NTSC playback
NVM	Power down circuit to protect NVM
PIPC	PIP Control
PIPS	PIP Surf
PIPT	PIP Tuner
PLST	Program List
ROTI	Rotation
SBNP	Auto Standby with no picture
SMCK	Smart clock
SNIC	Sound IC 3451
SOSD	Smart OSD
SURF	Surf
TIME	Timer
TWIN	Time Window
VDBY	Virtual Dolby
VMUT	Video Mute
VSLC	Vertical Slicing
W169	Double Window 16:9
W4X3	Double Window 4:3

8.4.3 Option bits/bytes

An option byte value is calculated in the following way:
Value 'option bit 1' x 1 =
Value 'option bit 2' x 2 =
Value 'option bit 3' x 4 =
Value 'option bit 4' x 8 =
Value 'option bit 5' x 16 =
Value 'option bit 6' x 32 =
Value 'option bit 7' x 64 =
Value 'option bit 8' x 128 =
===================== +
Total value 'option byte' =

9. Circuit descriptions and abbreviation list

9.1 Circuit descriptions

The following circuits are described:
1. Introduction
2. Block diagram
3. Power supply (see A8 TM: 4822 727 21613)
4. Control
5. Tuner & IF
6. Video processing
7. Synchronisation
8. Horizontal deflection (see A8 TM: 4822 727 21613)
9. Vertical deflection (see A8 TM: 4822 727 21613)
10. Audio processing
11. OSD / Teletext
12. CRT / SCAVEM / Rotation
13. Double Window (DW)

9.1.1 Introduction

The A10A is the successor of the A8-chassis. A10 is the chassis name, A = Asian Pacific.

Where the A8 used a lot of different panels, the A10 architecture consist of 1 conventional Large Signal Panel (LSP) and 1 Small Signal Board (SSB) module, placed into a so called SIMM-connector (Standard Interface, 80 pins):
- The LSP is built up very conventional, with hardly any surface mounted components on the copper side. It incorporates the Power Supply, the Deflection, the Tuner, the I/O and the Audio Amplifier circuits.
- The SSB is a high tech module (2 sides reflow technology, full SMT) with very high component density. Despite this, it is designed in such a way, that repair on component level will be possible. To achieve this extensive diagnostic possibilities are provided via Service Modes and/or ComPair. The SSB incorporates the IF-, Video / Audio-processing, Control and OSD/TXT circuits.

In this 'circuit description' chapter, sometimes will be referred to the Training Manual of the A8 (4822 727 21613). This is done for the following circuits: the Power supply, the Horizontal (Line) Deflection and the Vertical (Frame) deflection parts. The electrical principle of these circuits are also applicable on the A10.

9.1.2 Block diagram

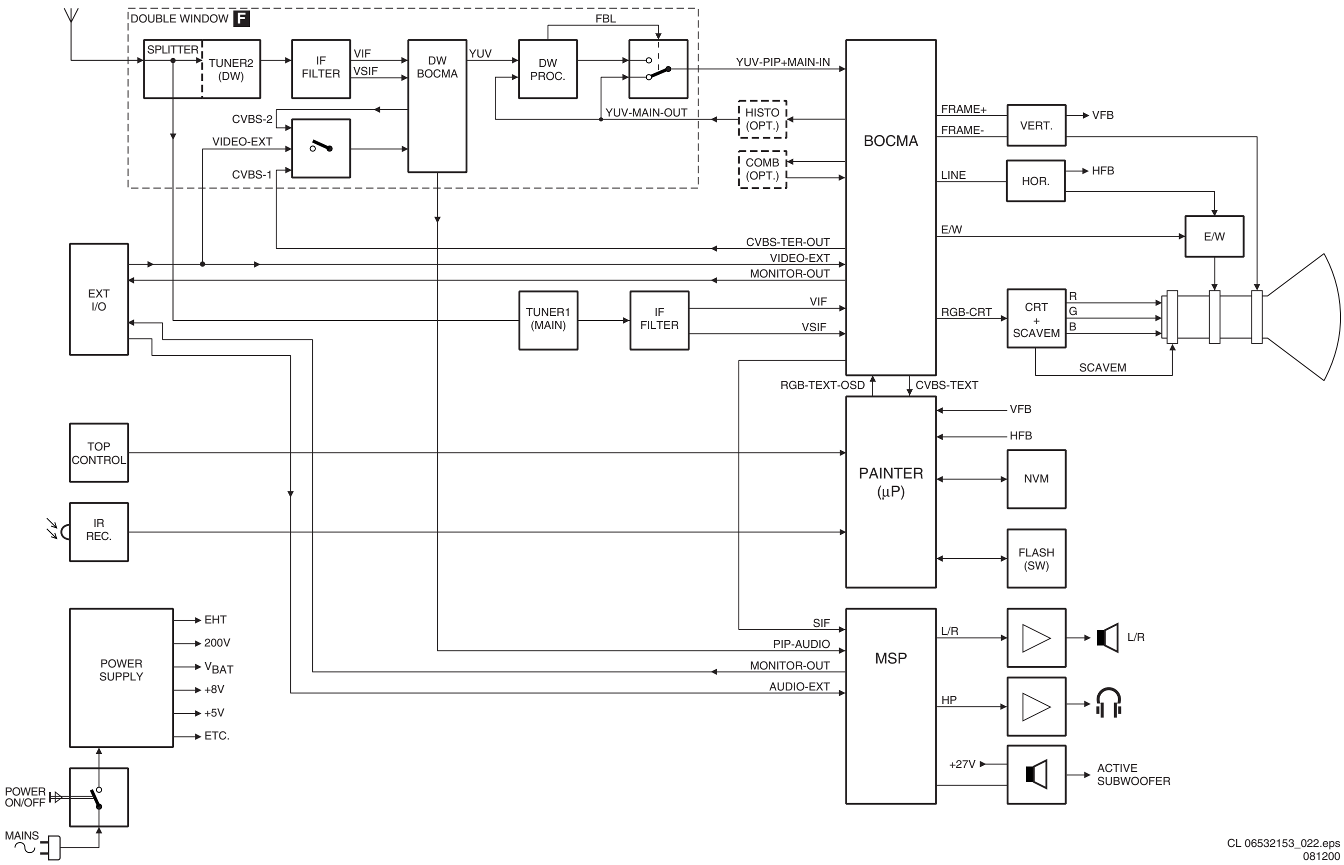


Figure 9-1

The Tuner is a PLL tuner and delivers the IF-signal, via audio & video SAW-filters, to the Multi-system TV processor (TDA888x, IC7301 also called BOCMA), which has the following functions:
- Multi-system decoder.
- Video source- and record select.
- Colour decoder.
- RGB output.
- Sound demodulator.
- Geometry control.
- Picture improvement.
- Synchronisation.

The BOCMA has 1 input for the internal CVBS signal and 2 inputs for external CVBS or Y signals. It has only one Chroma input so that it is not possible to apply 2 separate Y/C inputs. The selection is made via the I^2C-bus.

It has 2 independently switchable CVBS outputs for e.g. TXT, Comb-filter, CVBS-monitor or PIP/DW (optional).
Two AV-connectors (cinch) are used: AV1 is fully equipped and AV2 is meant for VCR. The Monitor-out of AV2 can be used for WYSIWYR (What You See Is What You Record).

Internal video processing is done in the BOCMA with YUV-signals. It also handles the video control, geometry part and the insertion of the TXT/OSD RGB-signals. The video part delivers the RGB signals to the CRT-panel and the geometry part delivers the H-drive, V-drive (differential output), and E/W-drive.

Both deflection circuits are located on the LSP and are driven by the BOCMA. The horizontal output stage generates also some supply voltages and the EHT-, focus- and Vg2-voltages.

Picture In Picture (PIP) and Double Window (DW) are both optional (PIP is only used in the NAFTA-region).
Double Window (DW) models are always equipped with 2 tuners. The IF signal from the 2nd tuner is processed by a 2nd BOCMA video processor.
For AP, China and LATAM regions, the TV uses one RF-signal, which is splitted and fed to the main tuner on the LSP. Due to this construction, the main tuner (on the LSP) always processes the main picture and the 2nd tuner always processes the DW picture. If the picture needs to be swapped, then the tuner RF frequency is swapped, rather then the 'baseband-signal switching' as done in the NAFTA region.
The V-chip data slicer is not present in these regions.

The RGB amplifiers on the CRT-panel are integrated in one IC (TDA6107Q) and are supplied with 200 V from the LOT.
The SCAVEM circuit modulates transitions of the Luminance (Y) signal on the horizontal deflection current, giving a sharper picture.

The sound part is built up around the MSP34xx (Multi-channel Sound Processor) for IF sound detection, sound control and source selection. Dolby decoding is also done by the MSP. Amplification is done via an integrated power amplifier IC, the AN5277.

The microprocessor, called Painter (SAA55XX, IC7064), takes care of the set control, error generation and analogue TXT/OSD input- and output processing.
The Painter, ROM and RAM are supplied with 3.3 V, which is also present during STANDBY.
The NVM (Non Volatile Memory) is used to store the settings, the flash-RAM contains the set software and the DRAM (located inside the μP) is capable for storing 10 Teletext pages or 100 pages (software version dependent).

The power supply is a Switch Mode Power Supply (SMPS) with minimum voltage switch. It is a flyback converter with primary current sensing, secondary voltage sensing and mains input measuring. It is built around IC7921 (which has a built-in MOSFET and control circuit) and generates a/o. the 140 V (V_{BAT}) and the 27 V (for the audio part).
During Standby, the power supply is switched to a 'low power burst mode' via TS7946 and the following burst mode generator, in order to reduce the power consumption.
A relay is used to switch the degaussing circuit for several seconds during switching 'ON' of the set.

9.1.3 Power supply (diagram A1)

For a circuit description see A8 Training Manual: 4822 727 21613. Differences with the A8 are:
- Item-numbers are different from the one mentioned in the text.
- Degaussing circuit
- Output voltages

Degaussing circuit (diagram A1: section A1 - D3)
The degaussing circuit is activated whenever the TV set is turned on. So from normal 'off' to 'on' and from 'stand-by' to 'on' the degaussing circuit is activated. During start-up the signal LIGHT_SENSOR_VDEGAUS (A4-1) is low. After start-up of the μP this becomes high for 2 seconds which forces TS7932 in conduction. Now the coil of the relay is activated and switch 1931 is closed. The mains voltage is now connected to the degaussing coil. The degaussing current passes through the degaussing coil and through PTC 3911 and PTC 3912, which limit the inrush-current.
After these 2 seconds, the signal LIGHT_SENSOR_VDEGAUS goes low, 7900 turns off, the coil of relay 1931 is de-energised and the 220 V_{AC} is disconnected from the degaussing coil. During normal operation, no current passes through the degaussing coil due to the fact that switch 1931 is opened.

Output voltages
- +8V_UNREG (Input voltage for stabiliser 7942 and supply voltage for the circuit to activate the degaussing coil).
- +33V (For Tuner at Mono-carrier and PIP-panel). Created via R3409 and zenerdiode 6481.
- V_{BAT} (Battery Voltage for Line Output Stage): +140 V.
- +8V (BOCMA Supply, Video at SSB). Output voltage from stabiliser 7942. This voltage is decreased in standby to 2.3 V. In standby TS7944 is conducting and switching R3945 parallel to R3942 and R3947.
- +5V_STBY. This voltage is also present during standby. If this voltage and +5 V are missing check Fuse 1961. If the voltage at pin 2 & 5 of 7968 is present replace 7907.
- +5V (For Tuner, NV_CLOCK, Video at SSB, PIP-panel). This voltage is disabled when the +13V-VERT is not present at pin 2 of IC7967. +13V -VERT is generated by the line-output circuit. So when the line-output circuit is working correctly the +5V is enabled to start the set.
- +27V (Audio Supply). If this voltage is missing check D6971/6972 and/or sound-amplifier IC7702.
- 3V3_STBY (μP Supply, NVM, BOCMA supply, Receiver LED): This voltage is also present during standby. If this voltage is missing check NFR 3964.

9.1.4 Control (diagram C4)

Micro-processor
The microprocessor (SAA55XX, IC7064 called Painter) provides:
- Control functions for the TV-set.
- On Screen Display (OSD).
- Teletext functions.
- I/O-ports for I^2C, RC5, LED, and service modes.
- Error code generation.

For 10 pages TXT-data can be stored internally.
The Non Volatile Memory IC7066 is a 4 kB version M24C32W6.

All ICs in this part are supplied with 3V3, which is also present during Standby. For this voltage a zenerdiode is used (D6966).

For stable OSD and TXT, the display is synchronised to the TV signal processing device by way of horizontal and vertical sync signals provided by external circuits (HFB and VFB). From these signals all display timings are derived.
The OSD/TXT RGB-outputs (46/47/48) and fastblanking (52) are fed to the BOCMA (pins 35 - 38).
Below find the pinning description of the Painter (IC7064).

Pin	Signal	Function
1	TILT	Generates drive signal for rotation circuit
2	SEL_SVHS_RR_STATUS2	Selects Y/C source from Side or Rear I/O and detects presence of EXT2 (CVBS) / 4:3 or 16:9
4	STATUS1_PIP-AFT_PIP-50-60HZ	Detects presence of EXT1 (CVBS) / 4:3 or 16:9
5	KEYBOARD	Input line from Top Control keyboard
6	FRONT_DETECT	Detects presence of Head-phone at FRONT
13	STAND-BY	To switch between Standby and Normal operation
16	SEL_MAIN_FRNT_RR	Selects main video source from Rear or Front
17	COMM_LINE	P50 in/output (Easylink)
18	LIGHT-SENSOR_VDEGAUSS	Activates the degaussing re-lay at switch on
24	SYS1	Selects Combfilter
25	SYS2	Selects Combfilter
28	ON_OFF_LED	LED driver output
31	CVBS2OUT	CVBS input for TXT data
32	G_SC1-IN_Y-IN	
46	B_TXT_OSD	Blue output for OSD/TXT
47	G_TXT_OSD	Green output for OSD/TXT
48	R_TXT_OSD	Red output for OSD/TXT
52	FBL_TXT_OSD	Fast blanking output for TXT and OSD
52	FBL_SCAVEM	Fast blanking output for SCAVEM
53	HFB	H-sync input for stable OSD/ TXT
54	SEL_MAIN_R1R2	Selects main video source from EXT1 or EXT2
55	VFB	V-sync input for stable OSD/ TXT
59	SEL_IF_LL	Switches the appropriate SAW filter for LL'
70	CLOCK12MHz	Clock input
76	RC5	Input line from Remote Con-trol
81	SCL	Clock output of master I^2C bus
82	SDA	Data in/out of master I^2C bus
83	SCL_2	Clock output of NVM I^2C bus
84	SDA_2	Data in/out of NVM I^2C bus
93	AGCuP	
96	HIS_OFF	To activate the optional His-togram IC TDA9171
98	SOUND_ENABLE	Mutes the audio amplifier
100	PANORAMA	Activates 16:9 feature

I^2C-busses

In the A10A-chassis with Painter-processor there are two I^2C-busses used:

- Hardware I^2C-bus, used for all IC communication.
- Separate short bus for the Non Volatile Memory (NVM), to avoid data corruption.

NVM

The Non Volatile Memory IC7066 contains all set related data that must be kept permanently, such as:

- Software identification.
- Operational hours.
- Error-codes.
- Option codes.
- All factory alignments.
- Last Status items for the customer + a complete factory recall.

9.1.5 Tuner & IF (diagram A4, C1 & C3)

Tuner

Tuning is done via I^2C. The reference voltage on pin 9 is 33 V. This voltage is derived from the V_{BAT} via a resistor of 68 kΩ and a zenerdiode.

Video IF amplifier

The IF-filter is integrated in a SAW (Surface Acoustic Wave) filter. One for filtering IF-video (1451 or 1454 in case of system L/L') and one for IF-audio (1455). The type of these filters is depending on the standard(s) that has to be received.

The output of the tuner is controlled via an IF-amplifier with AGC-control. This is a voltage feedback from pin 7 of the BOCMA to pin 1 of the tuner. The AGC-detector operates on top sync and top white level. AGC take-over point is adjusted via the service alignment mode 'Tuner' - 'AGC'. If there is too much noise in the picture, then it could be that the AGC setting is wrong. The AGC-setting could also be mis-aligned if the picture deforms with perfect signal; the IF-amplifier amplifies too much.

An (alignment free) PLL carrier regenerator with an internal VCO demodulates the video signal. This VCO is calibrated by means of a digital control circuit, which uses the clock frequency of the µP as a reference. The frequency setting for the various standards (33.4, 33.9, 38.0, 38.9, 45.75 and 58.75 MHz) is realised via the I^2C-bus.
The AFC output is generated by the digital control circuit of the IF-PLL demodulator and can be read via the I^2C-bus.

The video identification circuit is used to identify the selected CBVS or Y/C signal.
The IC contains a group delay correction circuit, which can be switched between the BG and a flat group delay response characteristic. This has the advantage that in multi-standard receivers no compromise has to be made for the choice of the SAW filter. Also the sound trap is integrated. The centre frequency of the trap can be switched via the I^2C-bus. The signal is available on pin 27.

QSS sound circuit

The single reference QSS mixer is realised by a multiplier. In this multiplier the SIF signal is converted to the intercarrier frequency by mixing it with the regenerated picture carrier from the VCO. The mixer output signal is supplied to the output via a high-pass filter for attenuation of the residual video signals. With this system a high performance hi-fi stereo sound processing can be achieved.

9.1.6 Video processing (diagram C2 & C3)

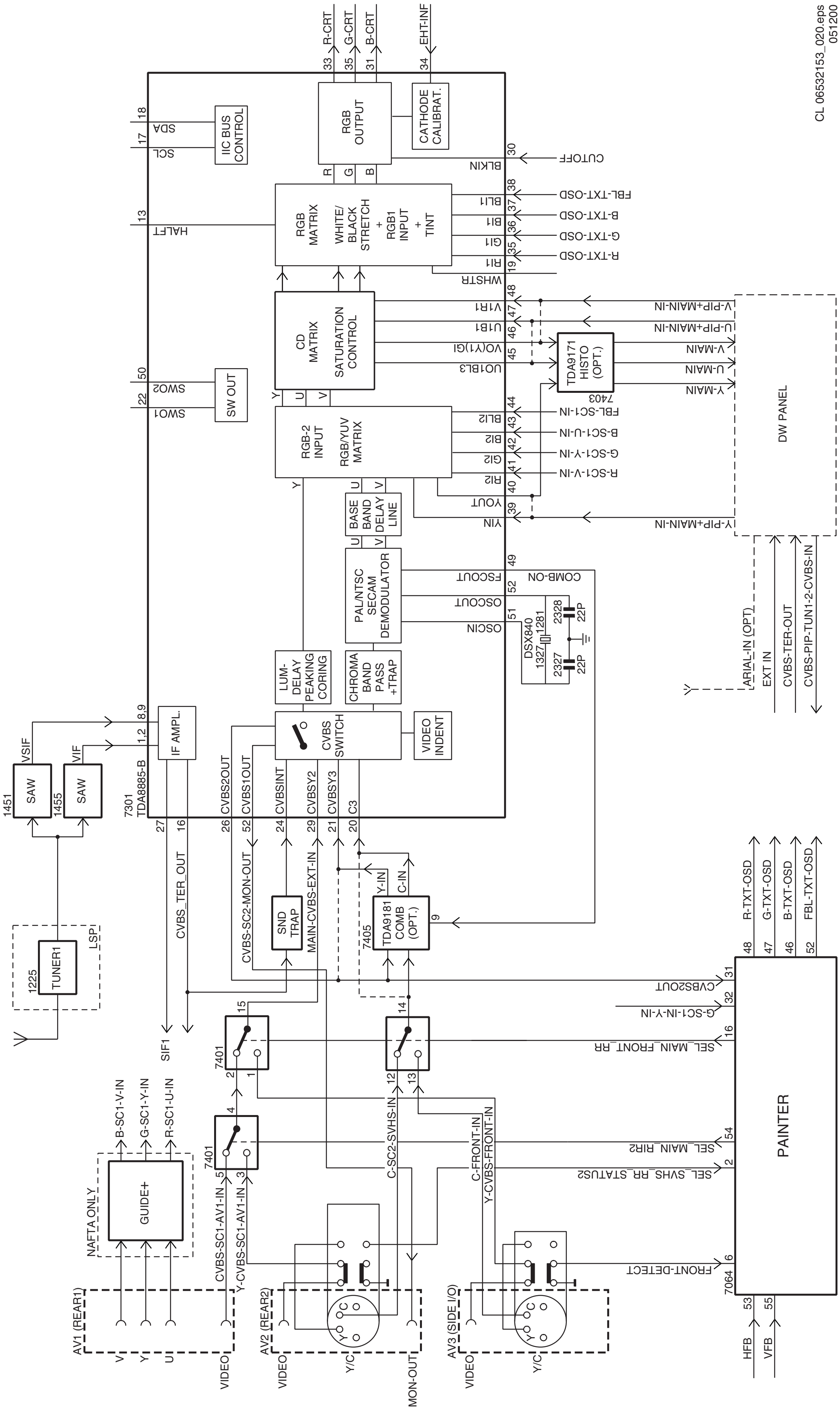


Figure 9-2

Introduction

The video processing is completely handled by a one-chip video processor the TDA888X. This IC contains:

- IF demodulator.
- Chrominance decoder
- Sync separator.
- Horizontal & vertical drive.
- RGB processing.
- CVBS and SVHS source select.

It has also build in features like:

- CTI.
- Black stretch.
- Blue stretch.
- White stretch.
- Slow start up.
- Dynamic skin tone correction etc.

Further, and this is different with the used TDA884x in the A8, it also incorporates sound IF traps and filters, and requires only one crystal for all systems.

Source selection

The BOCMA has an input for the internal CVBS signal and 2 inputs for external CVBS or Y signals. The circuit has only 1 Chroma input so that it is not possible to apply 2 separate Y/C inputs.
The selection of the various sources is made via the I^2C-bus.
The used IC version has 2 independently switchable outputs:

- The CVBS1 output (pin 26) is identical to the selected signal that is supplied to the internal video processing circuit and is used as source signal for the teletext decoder (Painter). Both CVBS outputs have an amplitude of 2.0 V-pp.
- The CVBS2 output (pin 52) is fed to monitor-out of AV2 for WYSIWYR (What You See Is What You Record).

If the Y/C-3 signal is selected for one of the outputs, the luminance and chrominance signals are added so that a CVBS signal is obtained again.

I/O

The I/O is divided over two parts: Rear I/O and Side I/O. The rear has 2 AV inputs, the side has one AV-input. The I/O signals are routed via the LSP to the SSB panel.

- AV1: The input of AV1 is CVBS or YUV and L/R audio.
- AV2: The input of AV2 is Y/C or CVBS and L/R audio. The output signal is CVBS_SC2_MON_OUT (+ sound). It is meant for VCR and has therefore an additional signal in relation to AV1 (but no RGB): it has the possibility for Y/C_in.
- AV3: The input is SVHS or CVBS and L/R audio.

Double Window (DW)

For a detailed circuit description see paragraph 13.

Protections

Overvoltage conditions (X-ray protection) can be detected via the EHT tracking pin (pin 3). When an overvoltage condition is detected the vertical output drive signal will be switched-off via the slow stop procedure but it is also possible that the drive is not switched-off and that just a protection indication is given in the I^2C-bus.
This pin can also be used to switch off the TV-receiver in a correct way when it is switched off via the mains switch or when the power supply is interrupted by pulling the mains plug. It is possible to place the vertical deflection in an overscan position.

The IC has a second protection input on pin 58 used as 'flash' protection. When this input is activated the horizontal drive signal is switched-off immediately and switched-on again via the slow start procedure.

The selection of the external I/O's is controlled by the µP (pins 16 & 55) and handled via IC7401:

- SEL-FRNT-R1R2 is the selection between AV1 (R1) and AV2 (R2).
- SEL-MAIN-FRNT-RR selection is made between Side(Front) and Rear I/O.

Combfilter

After the selection of the external signals, AV1, AV2 or Side I/O (AV3), is made, the Y/CVBS signal is fed to the TDA888X (pin 29) along with the Front-end signal (pin 24). The selection between the 2 is made in the BOCMA and the output (pin 26) is fed to the (optional) Comb Filter, whose output is again fed to the BOCMA (pin 21) for further processing. The external colour signals are also fed to the Comb filter. In SVHS mode the Comb filter is bypassed and the external signals are directly fed to the BOCMA.
Switching the Comb filter is done via pin 49 of IC7301. Video standard selection is done via the SYS1 and SYS2 signals from the microprocessor.
If the Combfilter is not used then the jumper (4472 diagram C3) is present and the external Y/C signals are directly fed to the pins 20, 21 of IC7301.

After this stage we add the external RGB signals (from AV1) to pins 40 - 44.

Histogram IC (YUV picture improvement)

The demodulated video-signal can be checked on pins 40, 45 and 46 of IC7301 and is fed to pins 39, 47 and 48. In this path the Histogram IC TDA9171 can be inserted. Without this IC, the jumpers 4436 & 4433 (Y), 4434 & 4432 (U) and 4435 & 4431 (V) are used.
This TDA9178 can control various picture improvements: histogram processing, colour transient improvement and luminance transient improvement.

- Sets without TDA9178: for sets without TDA9178, the Dynamic Skin Tone Control, Blue Stretch and Green Enhancement are controlled by the BOCMA.
- Sets with TDA9178: for sets with TDA9178 the Dynamic Skin Tone Control and Green Enhancement are controlled in the TDA9178. The Blue Stretch is controlled by the BOCMA and the Blue Stretch of the TDA9178 is switched off.

When the TDA9178 is used, noise reduction is also available. The action of the noise reduction has also influence on the sharpness control: if a noisy signal is received then the noise reduction should be high and sharpness low and also vice versa.

Chroma and Luminance processing

The circuit contains a chroma bandpass and trap circuit (including a luminance delay line and the delay for the peaking circuit). The centre frequency of the chroma bandpass filter is switchable via the I^2C-bus so that the performance can be optimised for ‘front-end’ signals and external CVBS signals.

Colour decoder

The colour decoder can decode PAL, NTSC and SECAM signals. The internal clock signals for the various colour standards are generated by means of an internal VCO, which uses the 12 MHz crystal frequency as a reference.
Under bad signal conditions (e.g. VCR-playback), it may occur that the colour killer is activated although the colour PLL is still in lock. When this killing action is not wanted it is possible to overrule it.
The IC contains an Automatic Colour Limiting (ACL) circuit which is switchable via the I^2C-bus and which prevents that oversaturation occurs when signals with a high chroma-to-burst ratio are received.

The reference frequency of the colour decoder is fed to the Fsc output (pin 49) and can be used to tune an external comb filter.
The base-band delay line is integrated. The demodulated colour difference signals are internally supplied to the delay line. The colour difference matrix switches automatically between PAL/SECAM and NTSC.

Picture improvement features
In the BOCMA various picture improvement features have been integrated. These features are:
- Video dependent coring in the peaking circuit. The coring can be activated only in the low-light parts of the screen. This effectively reduces noise while having maximum peaking in the bright parts of the picture.
- Colour Transient Improvement (CTI). This circuit improves the rise and fall times of the colour difference signals.
- Black-stretch. This circuit corrects the black level for incoming video signals, which have a deviation between the black level and the blanking, level (back porch).
- Blue-stretch. This circuit is intended to shift colour near ‘white’ with sufficient contrast values towards more blue to obtain a brighter impression of the picture
- White-stretch. This function adapts the transfer characteristic of the luminance amplifier in a non-linear way dependent on the picture content. The system operates such that maximum stretching is obtained when signals with a low video level are received. For bright pictures the stretching is not active.
- Dynamic skin tone (flesh) control. This function is realised in the YUV domain by detecting the colours near to the skin tone. The correction angle can be controlled via the I^2C-bus.

RGB output
The IC's have a flexible control circuit for RGB and YUV input signals which has the following features:
- Input which can be used for YUV or RGB input signals and as YUV interface. The selection of the various modes can be realised via the I^2C-bus. For the YUV input 2 different input signal conditions can be chosen It is also possible to connect the synchronisation circuit to the incoming Y input signal. This input signal can be controlled on saturation, contrast and brightness.
- The RGB-1 input which is intended for OSD/text signals and which can be controlled on contrast and brightness. By means of software the insertion blanking can be switched on or off. It is also possible to convert the incoming RGB-1 signal to a YUV signal. The resulting signal is supplied to the YUV outputs.
- The TDA888X versions have an additional YUV or RGB input which can be controlled on contrast, saturation and brightness. This signal is supplied to the control circuit via the YUV interface so that an external picture improvement IC will also have effect on this signal.

Geometry control
The deflection processor of the TDA888X series offers several control parameters for picture alignment:
- S-correction
- vertical amplitude
- vertical slope
- vertical shift
- vertical zoom
- vertical scroll

for vertical picture alignment, and
- horizontal shift.
- EW width with extended range because of the “zoom” function
- EW parabola width
- EW upper/lower corner parabola
- EW trapezium correction.
- horizontal parallelogram and bow correction

for the horizontal picture alignment.
The IC is designed for use with a DC-coupled vertical deflection stage. This is the reason why a vertical linearity alignment is not necessary (and therefore not available).
All geometry control is done via I^2C and the data is stored in the NVM (IC7066) of the SSB.

Cut-off control / white drive
The picture tube is continuously adjusted to prevent visible ageing of the picture tube. In this way the customer has always a perfect picture. This is so-called ‘Continuous Cathode Calibration’. The function is realised by means of 2-point black level stabilisation. By inserting two levels for each gun and comparing the result with 2 different reference circuits the drive is controlled. With two different reference currents the influence of picture tube parameters like the spread in cut-off voltage can be eliminated.
The measurement of the 'high' and the 'low' current of the 2-point stabilisation circuit is carried out in 2 consecutive fields. The leakage current is measured in each field, The maximum allowable leakage current is 100 µA. The current is measured via Black Current Input (BLKIN) that is fed back to pin 30 of IC7301.
When the TV is switched-on the RGB output signals are blanked and the black current loop will try to set the right picture tube bias levels and then there is RGB-drive.

Peak White Limiting
If the beam current becomes too high, the picture tube could be damaged. The control circuit contains a Peak White Limiting circuit (pin 34): if the beam current increases, the EHT-info voltage will decrease. Now the contrast will be reduced. The peak white level is adjustable via the I^2C-bus. The circuit also contains a soft-clipper, which prevents that the high frequency peaks in the output signal become too high. The difference between the PWL level and the soft clipping level is adjustable via the I^2C-bus in a few steps.

Switch-off control
During switch-off of the TV receiver a fixed beam current is generated by the black current control circuit. This current ensures that the picture tube capacitance is discharged. During the switch-off period the vertical deflection is placed in an overscan position so that the discharge is not visible on the screen.

9.1.7 Synchronisation (diagram C1)

Horizontal synchronisation
Before the video processor IC7301 can generate horizontal drive pulses, the supply voltages on both pins 23 and 53 must be present. After the start-up command of the µP (via the I^2C) the BOCMA starts giving horizontal pulses.
To obtain a smooth switch-on/off behaviour the horizontal drive signal is switched-on/off via the soft-start/soft-stop procedure. This function is realised by means of a variation of the T-ON of the horizontal drive pulse. When the soft-start procedure is completed the horizontal output is gated with the flyback pulse so that the horizontal output transistor cannot be switched-on during the flyback time.

An additional function of the IC is the ‘low-power start-up’ feature. For this function a supply voltage with a value between 3 and 5 V must be available at the start-up pin (required current 5 mA typical).
In this condition the horizontal drive signal has the nominal T-OFF and the T-ON grows gradually from zero to the nominal value as indicated in the soft-start behaviour. As soon as the 8 V supply is present, the switch-on procedure (e.g. closing of the second loop) is continued.

The horizontal drive signal is generated by an internal VCO, which is running at a frequency of 25 MHz. This oscillator is stabilised to that frequency by using the 12 MHz frequency of

the crystal oscillator as a reference. The horizontal sawtooth oscillator signal is converted into a square wave voltage. This square wave LINEDRIVE1 signal at pin 56 is fed to the line output stage. The time constant of the sync. circuit (different for VCR and weak terrestrial signals) is automatically internally determined by the BOCMA.

On pin 57 of IC7301 the sandcastle pulse (SC) is available. This is a 2-state pulse that is used for the synchronisation of the (optional) IC's 7405 and 7403.

The dynamic phase-correction signal at pin 58 of IC7301 gives horizontal shift corrections during beam current changes. If the beam current increases (more white), the EHT voltage decreases so the picture will become off-centre. This signal takes care that the picture remains in the middle of the screen by adapting the timing of the horizontal drive pulse (LINEDRIVE1).

Vertical synchronisation
The vertical sawtooth generator drives the vertical output drive circuit. On pins 63 & 64 are 2 differential voltages FRAMEDRIVE+ and FRAMEDRIVE-. These create differential currents, which are fed to the vertical output stage. Via the I^2C-bus adjustments can be made of the horizontal and vertical geometry.

E/W correction
The EW_DRIVE signal at pin 62 takes care of the correct pincushion correction for 110° tubes. It also corrects breathing of the picture due to beam current variations (EHT varies dependent of the beam current: e.g. for widescreen without load this is 31.5 kV and with load (1.5 mA) 29.5 kV). This correction is derived from the signal on pin 34 (EHT_INFO) which “measures” the beam-current. This signal has two functions:
- To correct the pincushion due to beam current variations.
- As protection signal. As the beam current is too high (voltage on pin 34 > 3. 5 V) the set is forced into protection.

9.1.8 Horizontal (line) deflection (diagram A2)

For circuit description see A8 Training Manual: 4822 727 21613.

Differences with the A8 are:
- Item-numbers are different from the one mentioned in the text.
- Additional Panorama circuit
- Output voltages: absence of the +30 V for the East-West protection.

9.1.9 Vertical (frame) deflection (diagram A3)

For circuit description see A8 Training Manual: 4822 727 21613.

Differences with the A8 are:
- Item-numbers are different from the one mentioned in the text.
- Additional protection circuit “Prot E-W” has been removed.

9.1.10 Audio processing (diagram C6 & A6)

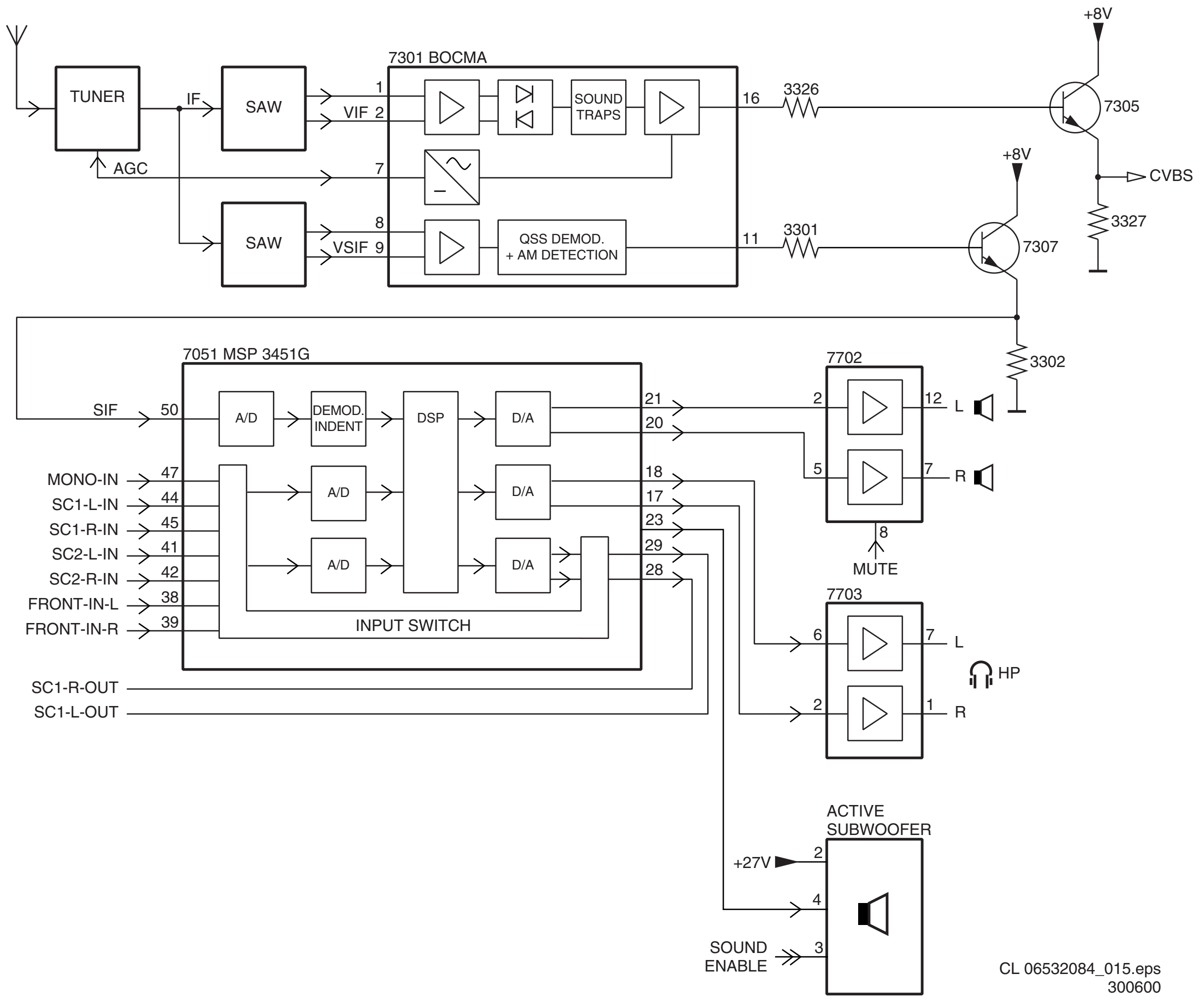


Figure 9-3

Introduction

The following systems are available:

- Basic : FM/AM mono (all standards).
- NICAM : FM stereo / NICAM B/G, D/K, I, L/L'.
- 2CS : FM stereo / dual language (all standards 4.5, 5.5, 6.5 MHz).
- BTSC: Mono/Stereo, Mono/Stereo and SAP.

All A10 sets contain one of ITT's Multistandard Sound Processing IC's for sound decoding:

- MSP3415D: All global sound standards, except BTSC.
- MSP3435G: Only BTSC
- MSP3451G: All global sound standards with Virtual Dolby and more I/O's.

This IC takes care of the main FM, AM, NICAM and BTSC sound decoding.
The analogue input and output sections of MSP offer wide range of switching facilities such that it is possible to distribute all possible source signals (internal and external) to the desired output channels (main, headphone or AV outputs).
All MSP versions contain digital audio processing, used for the basic left/right stereo sound, such as bass, treble, balance, incredible sound and spatial and source selection (SIF-signal, AV1 or AV2).
In addition to that, the MSP3451 is also able to perform Virtual Dolby, a Dolby approved sound mode for surround sound reproduction with left/right speakers only.

Basic

The MSP is used as sound decoder in all cases of transmission.

NICAM

The IF output from the tuner is filtered by SAW filters. AM sound is directly demodulated from the SIF. The L/L' switching is done for the BOCMA and also on the SAW filter to select the appropriate filter (SEL_IF_LL signal from µP).
The SIF from the BOCMA (pin 11) passes through the high pass filter and amplifier into the MSP input (pin 50) for further demodulation.

2CS

This analogue FM stereo audio standard is predominately used in Germany and The Netherlands. It is also used on some cable television networks.
The SIF from the BOCMA is available at its CVBS output (pin 11) and passes through the high pass filter and amplifier and fed into the MSP input (pin 50) for further demodulation.
Signals of all standards of 2CS and MONO are demodulated by MSP.

BTSC

For this system the MSP3435G is used, an alignment-free BTSC-stereo/SAP/DBX decoder. It is a sound processor for stereo/second audio program (SAP) baseband signals, in accordance with the BTSC standard for television receivers. It is controlled via I^2C.
The SIF from the BOCMA (pin 11) passes through the high pass filter and amplifier into the MSP input (pin 50) for further demodulation.

Source selection

- MSP3415D (stereo)
  - This IC is an economised version of the MSP3410 that is used in the MG-chassis. It can cover 2 stereo and 1 mono (AM) input. Since more inputs are required, separate source selectors are used (HEF4052, IC7650 and HEF4053, IC7630). This selector has AV1, AV2, FRONT and SC1-OUT (Tuner) as input and is connected to the AV1 input of the MSP3415. The AV2 input is not used.
  - Since the MSP3415 has only one AV output, which is connected to the AV1, a constant level output and connection to AV2 is not available. This is fixed by connecting the HEF4052 input selector to the constant level output and to AV2.
  - To get a constant level output if the Tuner is selected, the AV1 output (Tuner at any time), has to be fed back to the input selector and selected as input for the MSP (AV1 input).
  - The MSP3415 has no separate output to drive a headphone. Therefore the speaker outputs are hardwired (on the LSP) to the headphone amplifier.
- MSP3435G (BTSC)
  - See MSP3415.
  - BTSC: Demodulation of the BTSC multiplex signal.
  - SAP (Second Audio Program). This mode is available for BTSC sets and can be toggled 'on' or 'off'. The matrix of the relevant MSP-outputs must be switched appropriately to obtain SAP.
  - Alignment-free digital DBX noise reduction.
- MSP3451G (Virtual Dolby)
  - The MSP3451, which is used in all versions supporting Virtual Dolby, is capable of supporting 4 stereo inputs and 1 mono (AM) input. Therefore the extra input selector (HEF4052) is not needed.
  - The MSP3451 is also capable of supporting 2 AV outputs, so the trick used in the MSP3415 set-up to get a constant level output is not needed.
  - The MSP3451 has a separate headphone output, so sound control be done separate from the speakers.

Audio decoding

At the input a choice can be made between two IF-signals; SIF and SIFM. The selected signal is fed to the AGC. After this, an ADC converts the IF-signal to digital.
This digital signal can be processed by 2 demodulation channels. The first one is able to handle FM and NICAM signals. The second one can handle FM and AM signals. Each channel contains a mixer to shift the incoming signal in the frequency domain. This shift is determined by the value of a DCO (Digital Controlled Oscillator).
After the down-mix, the signal is fed, via a filter, to a discriminator. From here the AM, FM or NICAM demodulation can be performed.
Both channels contain an 'automatic carrier mute' function, which automatically mutes the output of the analogue section when no carrier is detected.
After demodulation, the FM-signals are subjected to a de-emphasis operation. After that the matrix of the stereo system is applied.

Audio processing

The sound processing is completely done by the MSP-family:

- Volume control is done by the user via the SOUND menu.
- Tone control in 'Stereo' sets is done via the BASS/TREBLE control.
- Headphone control in 'Stereo'-sets is done via the loudspeaker output of the MSP, no sound control possible. In 'Virtual Dolby'-sets, the MSP has a separate Headphone output so separate sound control is possible.
- Mute control can be done in different ways:
  - System muting: via the SOUND_ENABLE line of the Painter. Used during start-up/switch-off conditions, in order to avoid audible plops.
  - Headphone muting: the presence of a headphone is detected by the FRONT_DETECT line. If present the main speakers will be muted.

Automatic Volume Level (AVL)

One of the features of the MSP-family is AVL. If used, it limits the big volume differences in the broadcast between e.g. news transmissions and commercials or within a movie.

To be able to get a Dolby approval (for the Virtual Dolby sets), the AVL feature must be switchable. Therefore, the AVL feature is customer switchable via the menu.

Audio amplification (diagram A6)

The audio output stage is built around IC7702 , which is a balanced amplifier, and is located on the LSP. It uses an monolithic integrated power amplifier IC, the AN5277. The gain of the amplifier is constant. This means that volume control has to be done via the MSP.
The supply voltage is +27 V, generated by the power supply via L5912
The AN5277 delivers an output of 2 x 10 W_{RMS} to 2 full range speakers. A subwoofer is not implemented.

Muting

There are 3 types of muting available: system mute, headphone status mute and user mute.

- System muting - System muting is implemented for “special events” such as channel/source change event, loss of identification signal, on/off of set, during search and auto store/program, sound mode change. This muting is transparent to the user. Audio output should be muted before the above “special events” occurred, to prevent problems such as audible plop. Muting is done via the SOUND-ENABLE line connected (via TS7701) to pin 8 of the amplifier-IC and coming from the Painter. This signal is inverted by TS7701, as a result of which at a low level of the SOUND-ENABLE signal the IC will mute.
- Headphone status mute - A headphone status is available to detect the presence of the headphone and mute the main speakers if the headphone is detected. The microprocessor will read the FRONT-DETECT status.
- User muting - This is a mute option available to the user. The user select the MUTE option on the remote control to switched off/on the sound output to the main loudspeaker and the subwoofer.

Headphone amplifier (diagram A6)

The headphone amplifier is built around IC7703 (TDA1308T), which is an integrated class AB stereo headphone driver.

9.1.11 OSD / Teletext (diagram C2 / C4)

OSD

The On Screen Display information is generated by the microprocessor IC7064. The RGB and blanking signals for the OSD are fed to the RGB/blanking input of the Video Processing section of IC7301 via the same path as the teletext RGB/blanking signals.

The control circuit of the BOCMA has a half tone input (pin 13) which is used to reduce the contrast setting during mixed mode operation for teletext and OSD signals. The output signal has an amplitude of about 2 V black-to-white at nominal input signals and nominal settings of the controls. To increase the flexibility of the IC it is possible to insert OSD and/or teletext signals directly at the RGB outputs. This insertion mode is controlled via the Fast Blanking insertion input (pin 38).

Teletext

Sets with the SAA55XX microprocessor have the capability of decoding and displaying both 525-line and 625-line World System Teletext and offer a 10 (or 100) page Teletext memory.

The teletext function can be divided into the functions described below:

- The Data Capture section takes in the analogue Composite Video and Blanking Signal (CVBS), and from this extracts the required data, which is then decoded and stored in memory.
- The extraction of the data is performed in the digital domain. The first stage is to convert the analogue CVBS-signal into a digital form. This is done using an ADC sampling at 12 MHz.
- The data slicer extracts the digital teletext data from the incoming CVBS signal. This is performed by sampling the CVBS signal and processing the samples to extract the teletext data and clock.
- The data and clock recovery is then performed by a Multi-rate Video Input Processor (MulVIP). From the recovered data and clock the following data types are extracted: WST Teletext (625/525), Closed Caption, VPS and WSS. The extracted data is stored in on-chip DRAM via the Memory interface.

The capabilities of the display block are based on level 1.5 teletext. It consists of 25 rows each of 40 characters, with the characters displayed being those from rows 0 to 24 of the page memory. The display block supplies the RGB output signals.

For the display timing the signals VFB and HFB from the LSP are used. The display timing arranges the timing of the RGB signal in order to ensure a stable teletext picture:

- The VFB signal (pin 55) is derived from the vertical deflection circuitry. This is a signal with active 'Low' sync pulses.
- The HFB signal (pin 53) is derived from the horizontal output stage. The HFB signal is a signal with active 'HIGH' sync pulses.

Via the pins 46, 47 and 48 of IC7064 the B, G, R colour signals are supplied respectively to the RGB switch of the TDA888X.The output polarity of all these pins is active 'High'. Via pin 52 of IC7064 the FBL (fast blanking) signal is supplied to the RGB switch. Via the fast blanking signal the R, G, B signals are inserted in the television picture.

9.1.12 CRT / SCAVEM / Rotation (diagram B / B / A7)

RGB amplifiers

The integrated RGB video amplifier (IC7830 located on the CRT-panel) has three amplifier channels inside and drives the three cathodes of the colour CRT. The main features of this IC (TDA6107Q) are :

- This amplifier is connected to 200 V only (13 V reference is generated internally).
- Black current stabilisation output is also generated internally and this signal goes directly to the BOCMA feedback input.
- Thermal protection.

The amplifiers are basically 'negative feedback OpAmps' located inside the IC. Pins 1, 2 and 3 are inverting inputs for Green, Red and Blue; pins 7, 8 and 9 are cathode outputs for Blue, Red and Green. Pin 5 is the black current stabilisation output.

Cut-off stabilisation is an auto-tuning loop (active during a four-line period prior to the end of a field blanking pulse) which stabilises the black current of each RGB-channel sequentially and independently. This is a new concept known as ‘Continuous Cathode Calibration’, provided by the BOCMA. In this concept the cathode drive is adjusted at two points and hence provides better accuracy of black level.

To protect the RGB-amplifier against picture tube flashover discharge, an external protection circuit consisting of D6831, D6833 and D6835 combined with 100 Ohm resistors R3831, R3833 and R3835 is implemented. These diodes clamp the cathode output voltage to VDD. To limit the diode current, external resistors R3832, R3834 and R3836 of 1 kOhm are connected in series with the cathode input of each gun, in conjunction with the 2 kV sparkgaps in the CRT socket.

SCAVEM

The SCAVEM-circuitry is implemented in the layout of the picture tube panel. It is thus not an extra module. SCAVEM means SCAn VElocity Modulation. This means that the horizontal deflection is influenced by the picture content. In an ideal square wave, the sides are limited in slope by a limited bandwidth (5 MHz).
SCAVEM will improve the slope as follows: At a positive slope, a SCAVEM-current is generated which supports the deflection current. The first half of the slope the spot is accelerated and the picture is darker, while at the second half of the slope, the spot is delayed and the slope becomes steeper.
At the end of the slope, the SCAVEM-current decays to zero and the spot is at the original position. An overshoot occurs which improves the impression of sharpness. At the negative slope, the SCAVEM-current counteracts the deflection. During the first half of the slope, the spot is delayed, the slope becomes steeper.
During the second half the spot accelerates, the SCAVEM-current is zero at the end of the slope.

Via connector 0238, signal 'Y_MAIN_IN' is added to the emitter of TS7864. Via the emitter follower formed with TS7860, this signal is conveyed to the differentiator C2878 and R3864. Only the high frequencies are differentiated (small RC-time). The positive and negative pulses of this signal drive respectively TS7861 and TS7865 into conductivity. The DC setting of the output stage is set by R3870, R3871, R3872 and R3873. The working voltage of the transistors is settled at half the supply voltage.
At the positive section of the pulse, the current flows through R3887 and C2869, the SCAVEM-coil and TS7863. At the negative section of the pulse, the current flows through R3886 and C2869, the SCAVEM-coil and TS7862.

Rotation

In sets with a rotation coil (widescreen sets ≥ 32"), the amount of frame rotation is adjusted with the TILT-output of the Painter (pin 1).

9.1.13 Double Window (DW)

Introduction

The Double Window (DW) panel provides the option for viewer to see two pictures or programs on the displayed area of a TV screen. The displayed pictures can be in PIP mode or DW mode. The viewer can also select the size and position of the 'second' picture. The DW panel is only applicable to NAFTA, LATAM & AP.

The DW-models always have two tuners, however with different front-end executions depending on the region:
For AP, China and LATAM regions, the TV uses one RF signal which is connected to the tuner with splitter located on the DW panel. The 2nd tuner on the main panel is fed with the signal from this splitter. Due to this connection, the Main PCB tuner (Tuner 1) always processes the Main Picture, and the tuner located on the DW panel (Tuner 2) always process the DW picture. If the picture between the two tuners need to be swapped, then the tuner RF frequency is swapped rather then the base-band signal switching as done in the USA execution.

The V-Chip data slicer is not present in these regions.

Key components

- Tuner (7201):
  - AP Non-China — TEDE9X700A
  - China — TEDE9X701A
  - AP NTSC — TEDH9X700A
- SAW Filter (1352):
  - AP Non-China — K7260M (39.8 MHz)
  - China — K6287K (38 MHz)
- IF + Video processor (7301):
  - AP NTSC — TDA8887H
  - AP / China — TDA8889H
- Switching IC's — TDA8601 (7803), HEF4053 (7401 & 7402)
- IO expander (7403) — M62320P

Block Diagram
There are basically two types of configurations. One for NAFTA (2 antenna inputs) and one for AP/China and LATAM (1 antenna input) as shown below.

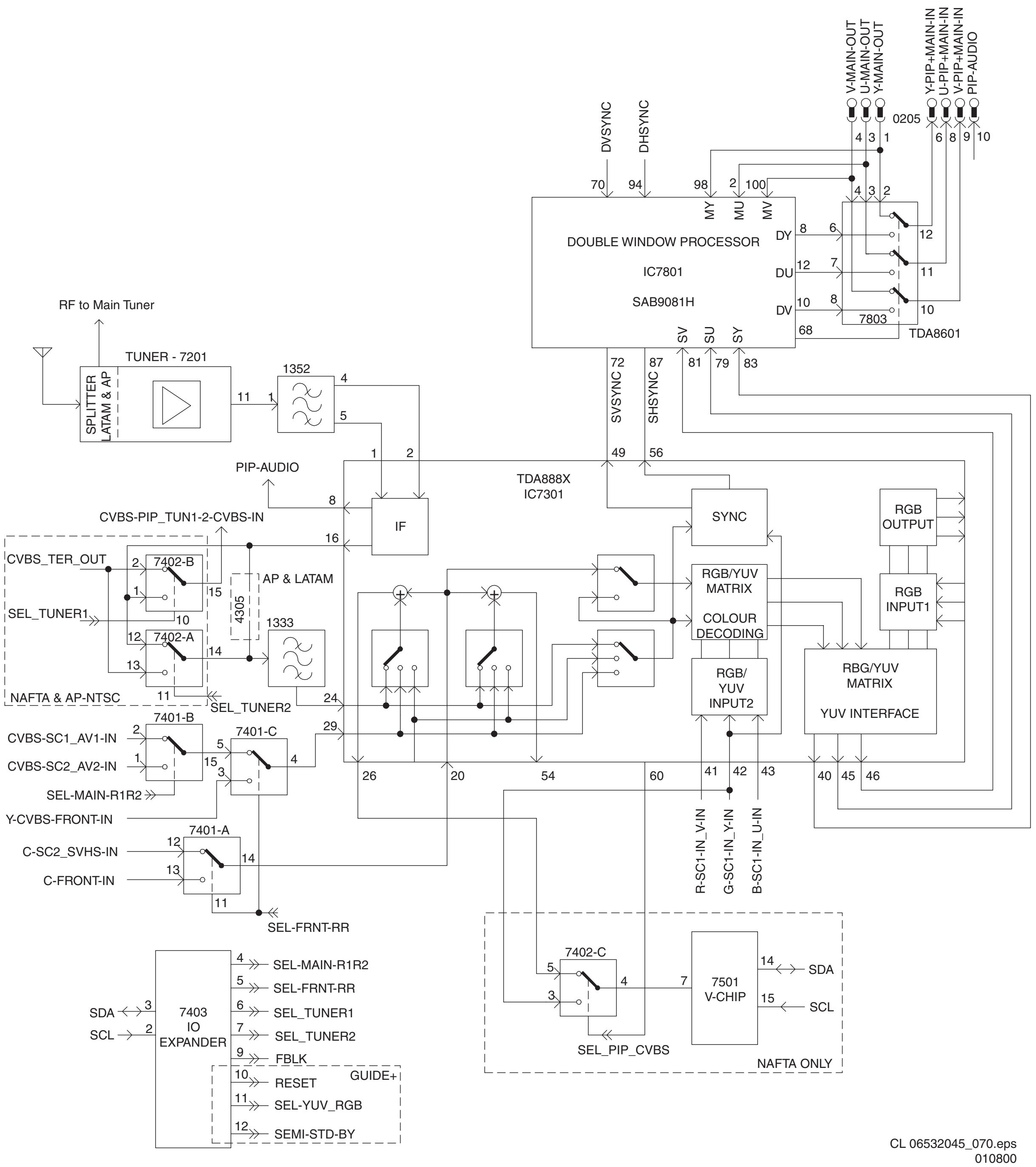


Figure 9-4

Circuit Description

IF & Video section

Basically the IF & Video processing part is quite similar to the circuits used in the main board, except it has a DW processor.

For AP and China execution, the TV uses one RF input to the DW's tuner with a splitter. The tuner on the main board receives RF from the splitter. Due to this configuration, the main board tuner always processes the Main picture while the DW tuner always processes the Sub picture. If the picture between the two tuners needs to be swapped, then the tuners' RF frequencies are swapped.

IF_TER from the tuner is fed to pin-1 & 2, IF circuits of TDA888x IC7301 via a SAW filter. The AGC voltage for the tuner can be adjusted in the SAM's tuner menu.

Depending of region execution, a different SAW filter is applied. Therefore circuit diversity is unavoidable as shown below. The RESET signal is used to set the SAW filter to a different IF frequency mode. The table below shows the IF frequency setting by RESET signal.

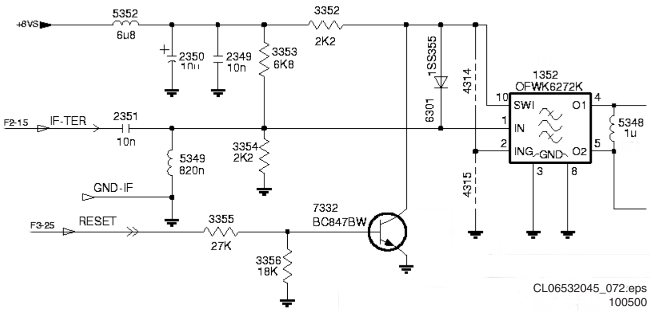


Figure 9-5

SAW-filter (1352)	RESET = Low	RESET = High
AP P/M (38.9MHz)	NTSC-M/N	PAL BG/DK/I
China (38.0MHz)	NTSC-M/N	PAL BG/DK/I

After IF demodulation, the CVBS_PIP_OUT is fed back to the TDA888x pin-24 via with or without video switching circuit comprises of 7402 HEF4053. This video switching circuit is only applicable to the AP-NTSC execution. Due to this construction, two independent RF signal pictures can be selectively displayed on the CRT's screen. The table below shows the switching logic.
For other executions (AP/China & LATAM) the switching circuit is bypassed using jumper 4305 & 4308 respectively.

SEL_TUNER1 (IC7403-pin 6)	SELTUNER2 (IC7403-pin 7)	Selected CVBS signals
0	0	Main Picture=Tuner 1 DW/PIP Picture=Tuner 2
0	1	Main Picture =Tuner 1 DW/PIP Picture=Tuner 1
1	0	Main Picture=Tuner 2 DW/PIP Picture=Tuner 2
1	1	Main Picture=Tuner 2 DW/PIP Picture=Tuner 1

In order to display the external AV sources by the DW panel, a source selection circuit is incorporated on the panel. In A10, 4 external AV sources are possible (AV1, AV2/S-VHS1, AV3/S-VHS2 & YUV). The selection between these sources is done by IC7401 HEF4053.

Note: When S-VHS is inserted from the rear, AV2 source will be disabled. Likewise when S-VHS is inserted from the side-AV. The YUV is fed directly to video processor IC7301. This source selection is done internally by the IC.

The switching logic of AV sources is shown in Table-below.

Device IC7403	pin	Func-tion	RF CVBS	AV1	YUV	AV2	AV2 S-VHS	AV3	AV3 S-VHS
IO Ex-pander	5	SEL-PIP-FRNT-RR	1	0	0	0	0	1	1
	4	SEL-PIP-R1R2	1	0	0	1	1	0	0

The video processor IC7301 will decode the CVBS at pin-24 or pin-29 into YC signal and further process it into YUV signal and output at pin-40, 45 & 46. For AP/China & LATAM, the IC7301 internal FM demodulator is used to produce mono audio and is available at the pin-8 of IC7301. This audio signal PIP-AUDIO is fed to the SSB sound processor as such that DW sound appeared at the headphone. For NTSC execution, PIP-AUDIO is fed to pin-11 of SSB VIF processor IC7301-A.

DW/PIP processing

IC7801 SAB9081 is a multi-standard PIP controller, which can be used in double window or PIP applications. The YUV from the video processor IC7301 is fed to pin-79, 81 & 83. IC7801 will inserts YUV from the IC7301 with reduced size into the main picture YUV source in PIP environment. The main picture YUV is fed to pin-100, 2 & 98 respectively. These signals are mainly used during the DW mode.

Inside IC7801, the conversion to the digital environment is done on chip with ADCs. Processing and storage (1 MB DRAM) of the video data is done entirely in the digital domain. The conversion back to the analogue domain is done by DACs. Internal clocks are generated by PLLs, which lock on to the applied horizontal and vertical syncs from the main & sub pictures. The main picture syncs are applied to pin-70 (vert.) & pin-94 (hor.) and the sub picture syncs are applied to pin-72 (vert.) and pin-87 (hor.).
For DW mode, the main picture is compressed horizontally by a factor of two and directly fed to the output. After compression, a horizontal expansion of two is possible for the main picture. The sub picture is also compressed horizontally by a factor of two but stored in memory before it is fed to the outputs.

Post-processed YUV signals are fed to fast switching IC7803 TDA8601 pin-6, 7 & 8. In normal operation (w/o DW), the main picture YUV signals (at pin-2, 3 & 4) are bypassed by IC7803, and returned back to the main video processor. When DW mode is active, the compressed YUV signals (main & sub pictures) are used and fed to main video processor. During the PIP mode, only sub-picture YUV signals are used. The insertion control is made possible by fast blanking signal from IC7801 pin-68.

Power supplies

The power supplies used by DW panel are from the main board 5V, 8V and 33V (for tuner only). The 5V is regulated to +3.3V, +3V & +3VD by IC7802 LM317T. These voltages are mainly used by DW processor circuitry. The 8V is mainly supplied to IC7301 TDA888x IF + video processing circuitry and also to fast switching IC7803.

9.2 Abbreviation list

2CS	2 Carrier Stereo
ACI	Automatic Channel Installation: algorithm that installs TV sets directly from cable network by means of a predefined TXT page
ADC	Analogue Digital Converter
AFC	Automatic Frequency Control: control signal used to tune to the correct frequency
AGC	Automatic Gain Control: algorithm that controls the gain of tuner
AM	Amplitude Modulation
AR	Aspect Ratio: 4 by 3 or 16 by 9
Artistic	see Painter 2.5: main processor
AVL	Automatic Volume Level
BG	System B and G
BLKIN	Black current information
B-SC1-IN	Blue AV1 in
B-SC2-IN	Blue AV2 in
B-TXT	Blue teletext
BOCMA	BiMOS one Chip Mid-end Architecture
BTSC	Broadcast Television Standard Committee (sound)
C-FRONT	Chrominance front input
CL	Constant Level: audio output to connect with an external amplifier
ComPair	Computer aided rePair
CRT	Cathode Ray Tube or picture tube
CSM	Customer Service Mode
CTI	Colour Transient Improvement: manipulates steepness of chroma transients
CVBS	Composite Video Blanking and Synchronisation
CVBS-AV	CVBS signal from external source (VCR, VCD, etc.)
CVBS-INT	CVBS signal from Tuner
CVBS-MON	CVBS monitor signal
CVBS-TER-OUT	CVBS terrestrial out
DBX	Dynamic Bass eXpander
DFU	Direction For Use: description for the end user
DNR	Digital Noise Reduction: noise reduction feature of the box
DSP	Digital Signal Processing
DST	Dealer Service Tool: special remote control designed for dealers to enter e.g. service mode
DVD	Digital Versatile Disc
DYN-PHASE-CORR	Dynamic phase correction
EHT	Extra High Tension
EHT-INFO	Extra High Tension information
EPG	Electronic Program Guide: system used by broadcasters to transmit TV guide information (= NexTView)
EW	East West, related to horizontal deflection of the set
AV	External (source), entering the set via AV or via cinches
FBL	Fast Blanking: DC signal accompanying RGB signals
FBL-SC1-IN	Fast blanking signal for AV1 in
FBL-SC2-IN	Fast blanking signal for AV2 in
FBL-TXT	Fast Blanking Teletext
FIL	Filament supply voltage
FM	Field Memory or Frequency Modulation
FRONT-C	Front input chrominance (SVHS)
FRONT-DETECT	Front input detection
FRONT-Y_CVBS	Front input luminance or CVBS (SVHS)
G-SC1-IN	Green AV1 in
G-SC2-IN	Green AV2 in
G-TXT	Green teletext
HA	Horizontal Acquisition: horizontal sync pulse coming out of the BOCMA
HFB	Horizontal Flyback Pulse: horizontal sync pulse from large signal deflection
BOCMA	High-end video Input Processor: video and chroma decoder of A10A/C/U
HP	Headphone
Interlaced	Scan mode where two fields are used to form one frame. Each field contains half the number of the total amount of lines. The fields are written in “pairs”, causing line flicker.
IO-BUS	In/Out - Bus
Last Status	The settings last chosen by the customer and read and stored in RAM or in the NVM. They are called at start-up of the set to configure it according the customers wishes
LATAM	LATin AMerican countries (Brasil, Argentina, etc.)
LED	Light Emitting Diode
LINE-DRIVE	Line drive signal
LSP	Large signal panel
MSP	Multistandard Sound Processor: ITT sound decoder of A10A/C/U
MUTE	Mute-Line
NAFTA	North American Free Trade Agreement (Canada, USA and Mexico).
NC	Not Connected
NICAM	Near Instantaneously Companded Audio Multiplexing
NVM	Non Volatile Memory: IC containing TV related data e.g. alignments
O/C	Open Circuit
ON/OFF LED	On/Off control signal for the LED
OSD	On Screen Display
Painter	On Screen Display, Teletext and Control; also named Artistic (SAA5565)
P50	Project 50 communication: protocol between TV and peripherals
PCB	Printed Circuit board
PTP	Picture Tube Panel
QSS	Quasi Split Sound
RAM	Random Access Memory
RC	Remote Control
RC5	RC5 signal from the remote control receiver
RESET	Reset signal
ROM	Read Only Memory
SAM	Service Alignment Mode
SAP	Second Audio Program
SC	Sandcastle: pulse derived from sync signals
SCAVEM	Scan Velocity Modulation
S/C	Short Circuit
SC1-OUT	AV output of the MSP audio IC
SC2-B-IN	AV2 Blue in
SC2-C-IN	AV2 chrominance in
SC2-OUT	AV output of the MSP audio IC
SIF	Sound Intermediate Frequency
SIMM	80-fold connector between LSP and SSB
SMPS	Switch Mode Power Supply
SNDL-SC1-IN	Sound left AV1 in
SNDL-SC1-OUT	Sound left AV1 out

SNDL-SC2-IN	Sound left AV2 in
SNDL-SC2-OUT	Sound left AV2 out
SNDR-SC1-IN	Sound right AV1 in
SNDR-SC1-OUT	Sound right AV1 out
SNDR-SC2-IN	Sound right AV2 out
SNDR-SC2-OUT	Sound right AV2 out
SNDS-VL-OUT	Surround sound left variable level out
SNDS-VR-OUT	Surround sound right variable level out
SNERT	Synchronous No parity Eight bit Reception and Transmit
SSB	Small Signal Board
STBY	Standby
SW	Subwoofer
TXT	Teletext
µP	microprocessor
VA	Vertical Acquisition
V-BAT	main supply for deflection (mostly 141 V)
VCO	Voltage Controlled Oscillator
VFB	Vertical Flyback Pulse: vertical sync pulse coming from the feature box
VL	Variable Level out: processed audio output towards external amplifier
WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
XTAL	Quartz crystal
Y-OUT	Luminance-signal

10. Spare parts list

CHASSIS

Various

Pos	Code	Description
xxx0	3122 785 90160	Power supply kit A10
xxx1	3122 785 90170	Line deflection kit A10
xxx2	9965 000 05769	SSB extension board A10

LSP [A]

Various

Pos	Code	Description
0127▲	4822 265 11253	FUSE HOLDER
0128	4822 255 70281	NTC
0188	4822 404 21262	CLAMPING HEATSINK
0189	3139 124 30531	SSB BRACKET AP/CHINA
0200	4822 267 10734	CON 5P
0201	4822 267 10557	CON 10P
0207	4822 267 10565	CON 4P
0211▲	4822 267 10774	CON 2P
0212▲	4822 267 10775	CON 2P
0214	4822 267 10734	CON 5P
0215	2422 025 16382	CON 3P
0215	4822 267 10735	CON 3P
0226	2422 025 16599	SIMM 80P
0229▲	4822 267 10748	CON 3P
0232	4822 267 10565	CON 4P
0233	4822 267 10735	CON 3P
0234	4822 267 10735	CON 3P
0236	4822 267 10735	CON 3P
0240	2422 025 12485	CON 11P
0240	4822 267 10734	CON 5P
0246	4822 267 10565	CON 4P
0247	4822 267 10734	CON 5P
0272	4822 267 10735	CON 3P
1225▲	2422 542 90066	TUNER TEDE9X002A IEC
1225▲	2422 542 90072	TUNER TEDE9-031A PHONO
1225▲	2422 542 90057	TUNER TEDH9X001A IEC
1225▲	4822 210 10854	TUNER TEDH9X001A F-TYPE
1225▲	2422 542 90079	TUNER TEDH9X022A PHONO
1262	2422 026 05036	CINCH 9P
1262	2422 026 05064	CINCH 12P
1264	2422 026 04926	SOC 4P
1900▲	2422 086 10905	FUSE 4A
1931	4822 280 10367	CON 1P
1941▲	4822 071 51602	FUSE 1.6A
1941▲	2422 086 10784	FUSE 2.5A
1961▲	4822 071 51602	FUSE 1.6A
1961▲	2422 086 10784	FUSE 2.5A

Pos	Code	Description
2012	4822 126 14585	100nF 10% 50V
2020	4822 122 33177	10nF 20% 50V
2021	4822 122 33172	390pF 5% 50V
2023	4822 126 14043	1µF 20% 16V
2024	4822 126 14043	1µF 20% 16V
2201	5322 122 31863	330pF 5% 63V
2203	5322 122 31863	330pF 5% 63V
2204	4822 126 14043	1µF 20% 16V
2206	5322 122 31863	330pF 5% 63V
2208	5322 122 31863	330pF 5% 63V
2211	5322 122 32658	22pF 5% 50V
2217	5322 122 32658	22pF 5% 50V
2219	5322 122 32658	22pF 5% 50V
2224	4822 124 81286	47µF 20% 16V
2225	5322 122 32658	22pF 5% 50V
2227	4822 122 33575	220pF 5% 63V
2233	5322 122 31863	330pF 5% 63V
2239	5322 122 31863	330pF 5% 63V
2242	5322 122 31863	330pF 5% 63V
2244	5322 122 32658	22pF 5% 50V
2249	4822 122 33575	220pF 5% 63V
2261	4822 124 40196	220µF 20% 16V
2262	5322 122 31647	1nF 10% 63V
2265	4822 124 40207	100µF 20% 25V
2265	4822 124 41643	100µF 20% 16V
2266	2238 580 15645	47nF 10% 50V
2271	4822 124 21913	1µF 20% 63V
2276	5322 126 10511	1nF 5% 50V
2280	5322 122 32531	100pF 5% 50V
2281	4822 126 13486	15pF 2% 63V
2281	4822 122 33575	220pF 2% 50V
2282	4822 126 13751	47nF 10% 63V
2284	4822 124 40207	100µF 20% 25V
2404▲	4822 122 31177	470pF 10% 500V
2406	4822 121 43526	47nF 5% 250V
2409	5322 121 42386	100nF 5% 63V
2411▲	4822 126 13865	390pF 10% 2KV
2414▲	4822 121 70434	11nF 5% 1.6KV
2414▲	4822 121 70618	12nF 5% 1.6kV
2415▲	4822 121 70434	11nF 5% 1.6kV
2415▲	4822 121 70618	12nF 5% 1.6KV
2416▲	4822 126 13865	390pF 10% 2KV
2416▲	4822 126 14138	680pF 10% 2KV
2416▲	4822 126 13435	1.2nF 10% 2KV
2417▲	4822 122 31177	470pF 10% 500V
2419	4822 121 43888	360nF 5% 250V
2420	4822 124 41741	2.2µF 20% 350V
2422	4822 126 13751	47nF 10% 63V
2422	4822 126 13838	100nF 20% 50V
2430	4822 121 51305	15nF 10% 50V
2434▲	2020 021 91543	47µF 20% 160V
2437	4822 121 10619	220nF 10% 250V
2439	4822 121 51252	470nF 5% 63V
2442	4822 126 13838	100nF 20% 50V
2445	2020 012 93596	22µF 20% 250V
2447	4822 124 80791	470µF 20% 16V
2449	4822 124 11767	470µF 20% 25V
2450	4822 124 80791	470µF 20% 16V
2471	4822 121 42035	4.7µF 10% 100V
2473▲	4822 122 31177	470pF 10% 500V
2474▲	2222 347 90232	27nF 10% 400V
2478	5322 121 10472	47µF 25V
2484	4822 121 43526	47nF 5% 250V
2485▲	4822 126 10206	2.2nF 10% 500V
2501	5322 122 32268	470pF 10% 50V
2503	5322 122 32268	470pF 10% 50V
2505	5322 121 42386	100nF 5% 63V
2506	4822 124 40255	100µF 20% 63V
2521	4822 121 42408	220nF 5% 63V
2522	4822 124 40255	100µF 20% 63V
2523	5322 121 42386	100nF 5% 63V
2524	5322 121 42386	100nF 5% 63V
2531	4822 124 40784	3300µF 20% 16V
2532	4822 124 21913	1µF 20% 63V
2536	4822 126 14335	1nF 10% 100V
2701	5322 124 41379	2.2µF 20% 50V
2701	5322 121 42386	100nF 50V
2702	4822 124 40255	100µF 20% 63V
2703	5322 124 41379	2.2µF 20% 50V
2703	5322 124 42386	100nF 50V
2704	4822 124 12056	1000µF 20% 35V
2705	4822 124 21913	1µF 20% 63V
2706	4822 126 13838	100nF 20% 50V
2707	4822 123 14026	35V 470µF 20%
2707	4822 124 12056	35V 1000µF 20%
2708	4822 124 21913	1µF 20% 63V
2709	4822 124 12056	1000µF 20% 35V
2711	4822 126 14491	2.2µF 10V
2712	4822 124 40255	100µF 20% 63V
2713	4822 126 13838	100nF 50V 20%
2714	5322 122 32531	100pF 5% 50V
2715	4822 124 40255	100µF 20% 63V
2716	4822 126 14491	2.2µF 10V
2717	5322 122 32531	100pF 5% 50V
2718	4822 124 40255	100µF 20% 63V
2719	5322 122 31647	1nF 10% 63V
2720	5322 122 31647	1nF 10% 63V
2722	4822 122 33127	2.2nF 10% 63V
2722	4822 122 33177	10nF 50V 0805 X7R
2723	4822 122 33127	2.2nF 10% 63V
2723	4822 122 33177	10nF 50V 0805 X7R
2726	4822 124 40255	100µF 20% 63V
2727	5322 122 32654	22nF 10% 63V
2728	5322 122 32654	22nF 10% 63V
2729	5322 122 32654	22nF 10% 63V
2730	5322 122 32654	22nF 10% 63V
2731	4822 126 14043	1µF 20% 16V
2732	4822 126 14043	1µF 20% 16V
2733	4822 124 11947	10µF 20% 16V
2734	4822 126 13751	47nF 10% 63V
2735	4822 126 13751	47nF 10% 63V
2736	4822 126 13751	47nF 10% 63V
2902▲	4822 126 13589	470nF 275V
2905	4822 121 70141	33nF 5% 400V
2908	4822 126 14153	2.2nF 10% 1KV
2909	4822 126 14153	2.2nF 10% 1KV
2909	4822 126 14151	220pF 10% 1KV
2915▲	4822 124 12442	330µF 20% 450V
2916	4822 121 70141	33nF 5% 400V
2917	4822 126 13682	100pF 5% 1KV
2919	4822 124 80604	47µF 20% 50V
2921	5322 122 32311	470pF 10% 100V
2922	4822 126 13862	1.5nF 10% 2KV
2925	5322 122 32311	470pF 10% 100V
2927	3198 014 01520	1N5 10% 50V
2929▲	4822 126 14049	1.5nF 20% 250V
2932	5322 122 32654	22nF 10% 63V
2936▲	3198 019 62210	220P 10% 1KV
2938▲	3198 019 64710	470P 10% 1KV
2939	4822 124 42336	47µF 20% 160V
2940▲	2020 021 91543	47µF 20% 160V
2941	4822 122 31175	1nF 10% 500V
2942	4822 121 42408	220nF 5% 63V
2943	4822 124 40784	3300µF 20% 16V
2945	4822 124 40784	3300µF 20% 16V
2945	4822 124 81144	1000µF 16V
2952	4822 126 14585	100nF 10% 50V
2953	4822 126 13751	47nF 10% 63V
2955	2238 580 15645	47nF 10% 50V
2955	4822 122 33336	8.2nF 10% 50V
2961	4822 122 31175	1nF 10% 500V
2962	4822 124 12056	1000µF 20% 35V
2963	2238 780 15654	220nF 10% 16V
2964	4822 122 31175	1nF 10% 500V
2966	4822 124 41584	100µF 20% 10V
2967	4822 124 41584	100µF 20% 10V
2970	5322 122 32331	1nF 10% 100V
2974	4822 124 11583	2200µF 20% 35V
2974	4822 124 12056	1000µF 20% 35V
2976▲	4822 126 14153	2.2nF 10% 1KV
2977	4822 124 41584	100µF 20% 10V

Pos	Code	Description
3024	4822 051 10102	1k 2% 0.25W
3025	4822 051 20391	390Ω 5% 0.1W
3026	4822 117 11449	2k2 5% 0.1W
3027	4822 051 20391	390Ω 5% 0.1W
3028	4822 051 20562	5k6 5% 0.1W
3029	4822 051 20472	4k7 5% 0.1W
3030	4822 051 20122	1k2 5% 0.1W
3031	4822 116 83933	15k 1% 0.1W
3032	4822 051 20472	4k7 5% 0.1W
3033	4822 116 83933	15k 1% 0.1W
3034	4822 117 10833	10k 1% 0.1W
3035▲	4822 052 10229	22Ω 5% 0.33W
3037	4822 051 20182	1k8 5% 0.1W
3038	4822 051 20182	1k8 5% 0.1W
3201	4822 116 83868	150Ω 5% 0.5W
3202	4822 117 13579	220k 1% 0.1W
3203	4822 050 11002	1k 1% 0.4W
3204	4822 117 10834	47k 1% 0.1W
3206	4822 116 83868	150Ω 5% 0.5W
3207	4822 117 13579	220k 1% 0.1W
3208	4822 050 11002	1k 1% 0.4W
3209	4822 117 10834	47k 1% 0.1W
3211	4822 116 52201	75Ω 5% 0.5W
3212	4822 116 52175	100Ω 5% 0.5W
3216	4822 116 52201	75Ω 5% 0.5W
3217	4822 116 52175	100Ω 5% 0.5W
3218	4822 116 52201	75Ω 5% 0.5W
3219	4822 116 52175	100Ω 5% 0.5W
3223	4822 116 52199	68Ω 5% 0.5W
3224	4822 051 10102	1k 2% 0.25W
3225	4822 051 10102	1k 2% 0.25W
3226	4822 116 52201	75Ω 5% 0.5W
3227	4822 116 52176	10Ω 5% 0.5W
3233	4822 050 11002	1k 1% 0.4W
3234	4822 117 10834	47k 1% 0.1W
3238	4822 050 11002	1k 1% 0.4W
3239	4822 117 10834	47k 1% 0.1W
3241	4822 117 10833	10k 1% 0.1W
3242	4822 050 11002	1k 1% 0.4W
3243	4822 117 11927	75Ω 1% 0.1W
3244	4822 116 52175	100Ω 5% 0.5W
3247▲	5322 117 11726	10Ω 5%
3248	4822 117 11927	75Ω 1% 0.1W
3249	4822 116 52176	10Ω 5% 0.5W
3255	4822 051 20479	47Ω 5% 0.1W
3256	4822 051 20479	47Ω 5% 0.1W
3257	4822 051 20479	47Ω 5% 0.1W
3263	4822 117 11449	2k2 5% 0.1W
3264	4822 051 20008	0Ω jumper (0805)
3267	4822 051 20479	47Ω 5% 0.1W
3268	4822 051 20479	47Ω 5% 0.1W
3271	4822 051 20333	33k 5% 0.1W
3272	4822 117 10833	10k 1% 0.1W
3272	4822 117 10837	100k 1% 0.1W
3273	4822 051 20223	22k 5% 0.1W

3274 4822 051 20154 150k 5% 0.1W
3276 4822 117 10833 10k 1% 0.1W
3277 4822 051 20101 100Ω 5% 0.1W
3278 4822 116 83872 220Ω 5% 0.5W
3280 4822 051 20333 33k 5% 0.1W
3281 4822 051 20472 4k7 5% 0.1W
3282 4822 117 10834 47k 1% 0.1W
3283 4822 051 20105 1M 5% 0.1W
3283 4822 117 10837 100k 1% 0.1W
3283 4822 117 11149 82k 1% 0.1W
3401 4822 116 52175 100Ω 5% 0.5W
3402 4822 050 11002 1k 1% 0.4W
3403 4822 116 52269 3k3 5% 0.5W
3403 4822 116 52289 5k6 5% 0.5W
3405 4822 117 12473 4k7 5% 5W
3409 2322 193 53333 33k 5%
3410 4822 116 52191 33Ω 5% 0.5W
3411 4822 053 21334 330k 5% 0.5W
3412 4822 116 52251 18k 5% 0.5W
3414 4822 116 52234 100k 5% 0.5W
3417 4822 116 52228 680Ω 5% 0.5W
3421 4822 053 11223 22k 5% 2W
3423 4822 053 11223 22k 5% 2W
3430 3198 012 32290 22Ω PM5%
3430 4822 053 12339 33Ω 5% 3W
3434 3198 012 32290 22Ω 5%
3434 4822 053 12339 33Ω 5% 3W
3435 4822 116 83882 39k 5% 0.5W
3436 4822 050 23303 33k 1% 0.6W
3436 4822 116 83882 39k 5% 0.5W
3437 4822 116 52257 22k 5% 0.5W
3438 4822 051 20474 470k 5% 0.1W
3439 4822 050 11002 1k 1% 0.4W
3440 4822 117 10837 100k 1% 0.1W
3441 4822 116 83961 6k8 5%
3442 4822 051 20564 560k 5% 0.1W
3445▲ 4822 052 11108 1Ω 5% 0.5W
3446▲ 4822 052 11108 1Ω 5% 0.5W
3447▲ 4822 052 11108 1Ω 5% 0.5W
3448▲ 4822 052 11108 1Ω 5% 0.5W
3449▲ 4822 052 11108 1Ω 5% 0.5W
3450 4822 116 52175 100Ω 5% 0.5W
3470 4822 050 11002 1k 1% 0.4W
3471 4822 116 83883 470Ω 5% 0.5W
3472 4822 116 52234 100k 5% 0.5W
3473 4822 116 52304 82k 5% 0.5W
3476 4822 116 52283 4k7 5% 0.5W
3477 4822 116 52238 12k 5% 0.5W
3478 4822 050 21003 10k 1% 0.6W
3479 4822 116 52234 100k 5% 0.5W
3480 4822 050 21003 10k 1% 0.6W
3488 4822 116 52175 100Ω 5% 0.5W
3489 3198 012 26880 6Ω8 5% 2W
3490▲ 4822 052 10478 4Ω7 5% 0.33W
3491▲ 4822 052 10478 4Ω7 5% 0.33W
3501 4822 051 10102 1k 2% 0.25W
3503 4822 051 10102 1k 2% 0.25W
3504 4822 050 22202 2k2 1% 0.6W
3504 4822 116 52256 2k2 5% 0.5W
3511 4822 116 52283 4k7 5% 0.5W
3512 4822 117 10833 10k 1% 0.1W
3513 4822 117 10833 10k 1% 0.1W
3521▲ 4822 052 10158 1Ω5 5% 0.33W
3522 4822 050 21003 10k 1% 0.6W
3523 4822 116 52175 100Ω 5% 0.5W
3524 4822 116 52175 100Ω 5% 0.5W
3526 5322 116 53564 3Ω3 5% 0.5W
3527 5322 116 53564 3Ω3 5% 0.5W
3528 4822 050 22202 2k2 1% 0.6W
3528 4822 116 52256 2k2 5% 0.5W
3530▲ 4822 052 10228 2Ω2 5% 0.33W
3701 4822 051 20562 5k6 5% 0.1W 0805
3701 4822 051 20472 4k7 5% 0.1W 0805
3702 4822 051 20562 5k6 5% 0.1W 0805
3702 4822 051 20472 4k7 5% 0.1W 0805
3704 4822 116 52291 56k 5% 0.5W
3705 4822 051 20182 1k8 5% 0.1W
3706 4822 117 10833 10k 1% 0.1W
3707 4822 117 10833 10k 1% 0.1W
3708 4822 117 10837 100k 1% 0.1W
3709 4822 117 11503 220Ω 1% 0.1W
3710 4822 117 10833 10k 1% 0.1W
3711 4822 117 10833 10k 1% 0.1W
3712 4822 051 20822 8k2 5% 0.1W
3713 4822 051 20223 22k 5% 0.1W
3715 4822 051 20332 3k3 5% 0.1W
3716 4822 051 20822 8k2 5% 0.1W
3717 4822 117 12955 2k7 1% 0.1W
3719 4822 117 12955 2k7 1% 0.1W
3720 4822 051 20332 3k3 5% 0.1W
3721 4822 117 10837 100k 1% 0.1W
3722 4822 117 12955 2k7 1% 0.1W
3723 4822 051 20332 3k3 5% 0.1W
3724 4822 051 20472 4k7 5% 0.1W
3724 4822 051 20562 5k6 5% 0.1W
3725 4822 051 20472 4k7 5% 0.1W
3725 4822 051 20562 5k6 5% 0.1W
3726 4822 051 20109 10Ω 5% 0.1W
3727 4822 116 52176 10Ω 5% 0.5W
3727 4822 116 52207 1.2kΩ 5% 0.16W
3727 4822 116 52283 4.7kΩ 5% 0.16W
3728 4822 051 20109 10Ω 5% 0.1W
3728 4822 116 52207 1.2kΩ 5% 0.16W
3728 4822 116 52283 4.7kΩ 5% 0.16W
3730 4822 051 20273 27k 5% 0.1W
3731 4822 051 20273 27k 5% 0.1W
3732 4822 116 52234 100k 5% 0.5W
3733 4822 051 20561 560Ω 5% 0.1W
3734 4822 051 20478 4Ω7 5% 0.1W
3735 4822 051 20478 4Ω7 5% 0.1W
3736▲ 4822 052 10108 1Ω 5% 0.33W
3737▲ 4822 052 10108 1Ω 5% 0.33W
3905 3198 013 04710 470Ω 2%
3907 4844 117 12074 NTC
3909▲ 4822 116 30451 NTC
3910▲ 4822 116 10105 9Ω 220V PTC
3911▲ 4822 116 10075 9Ω 220V
3911▲ 4822 116 10105 9Ω 220V PTC
3913▲ 4822 053 10104 100k 5% 1W
3913▲ 2322 193 53154 150k 5% 1W
3915 4822 053 20335 3M3 5% 0.25W
3916 4822 053 12104 100k 5% 3W
3917 4822 051 20561 560Ω 5% 0.1W
3923 2120 106 90554 0Ω22 5% 1W
3923 4822 117 11342 0Ω33 5% 1W
3924 2120 106 90554 0Ω22 5% 1W
3925 4822 116 52228 680Ω 5% 0.5W
3926 4822 116 52269 3k3 5% 0.5W
3927 4822 116 52243 1k5 5% 0.5W
3928 4822 116 52249 1k8 5% 0.5W
3928 4822 116 52263 2k7 5% 0.16W
3931 4822 117 10833 10k 1% 0.1W
3932 4822 117 10833 10k 1% 0.1W
3942 2120 108 92616 1k2 1%
3942 4822 051 20122 1k2 5% 0.1W
3943 4822 116 83881 390Ω 5% 0.5W
3944 4822 116 52257 22k 5% 0.5W
3946 4822 051 20223 22k 5% 0.1W
3947 4822 051 10102 1k 2% 0.25W
3947 5322 117 12487 1k 1% 0.125W
3948 4822 051 20683 68k 5% 0.1W
3951 4822 051 20562 5k6 5% 0.1W
3952 4822 051 20184 180k 5% 0.1W
3952 4822 117 11149 82k 5% 0.1W
3953 4822 051 20273 27k 5% 0.1W
3953 4822 117 10833 10k 5% 0.1W
3954 4822 051 20562 5k6 5% 0.1W 0805
3955 4822 117 10833 10k 1% 0.1W
3957 4822 051 20182 1k8 5% 0.1W
3958 4822 051 10102 1k 2% 0.25W
3962 4822 051 20562 5k6 5% 0.1W 0805
3963 4822 051 20109 10Ω 5% 0.1W
3965 4822 051 20229 22Ω 5% 0.1W
3966 4822 117 10361 680Ω 1% 0.1W
3967 4822 116 52219 330Ω 5% 0.5W
3968 4822 117 12955 2k7 1% 0.1W 0805
3969 4822 050 21003 10k 1% 0.6W
3970 3198 012 32290 22Ω 5%
3977 4822 117 12955 2k7 1% 0.1W 0805
3986 4822 051 20333 33k 5% 0.1W
3987 4822 117 10833 10k 1% 0.1W
3989 4822 051 20334 330k 5% 0.1W
3996▲ 4822 053 21155 1M5 5% 0.5W
3997 4822 051 20101 100Ω 5% 0.1W
4xxx 4822 051 10008 0Ω 5% 0.25W (1206)
4xxx 4822 051 20008 0Ω 5% 0.25W (0805)

5012 4822 157 11771 0.09µH 10%
5201 4822 157 11235 LANO2TB220J
5202 4822 157 11235 LANO2TB220J
5203 4822 051 20008 0R00 JUMP (0805)
5261 4822 157 11778 5U6 10%
5262 4822 157 50943 12µH
5406 4822 146 11045 DRIVER TRANSFORMER
5409 4822 157 11411 Bead 100MHz
5411 4822 157 11411 Bead 100MHz
5417▲ 4822 157 11712 LINERARITY COIL
5430 4822 157 11441 22U 5%
5431▲ 3128 138 21041 POWERSLOT 29"
5431▲ 3128 138 21061 POWERSLOT 34"DAF
5445 4822 157 52392 27µH
5446 4822 157 11672 12µH 5%
5448 4822 157 11672 12µH 5%
5475▲ 4822 157 11711 CHOKE COIL
5521 4822 157 11771 0.09µH 10%
5523 4822 157 11771 0.09µH 10%
5524 4822 157 11771 0.09µH 10%
5701 4822 157 52136 82µH
5702 4822 157 11228 LAN02TB101J
5900▲ 4822 157 11523 LINE FILTER 5mH 2A
5902▲ 4822 157 11523 LINE FILTER 5mH 2A
5902▲ 4822 157 11122 LINE FILTER 15mH 1.2A
5903▲ 4822 157 10999 LINE FILTER DMF-2830H
5903▲ 4822 549 43567 LINE FILTER 10mH 2A
5912▲ 2422 531 02373 TFM SMT EER-4954
5912▲ 2422 531 02375 TFM SMT EER-4245
5917 4822 526 10704 BEAD 100MHz
5920 4822 526 10704 BEAD 100MHz
5924 4822 526 10704 BEAD 100MHz
5936 4822 526 10704 BEAD 100MHz
5939 4822 157 71401 27µH
5941 4822 526 10704 BEAD 100MHz
5961 4822 526 10704 BEAD 100MHz
5971 4822 526 10704 BEAD 100MHz

6010 4822 130 83757 BAS216
6201 9322 107 42685 UDZ12B
6202 9322 107 42685 UDZ12B
6203 9322 107 42685 UDZ12B
6204 9322 107 42685 UDZ12B
6238 4822 130 11397 BAS316
6266 4822 130 11397 BAS316
6271 4822 130 11397 BAS316
6273 4822 130 11397 BAS316
6274 4822 130 11397 BAS316
6275 4822 130 11397 BAS316
6276 4822 130 11397 BAS316
6279 4822 130 10185 UDZS5.6B
6413 4822 130 30621 1N4148
6414▲ 4822 130 83825 BY328/20
6419 4822 130 42488 BYD33D
6420 4822 130 42488 BYD33D
6439 4822 130 34379 BZX79-B27
6440 4822 130 30621 1N4148
6442 4822 130 30621 1N4148
6445 4822 130 42606 BYD33J
6447 4822 130 41602 BYW95C
6448 4822 130 41602 BYW95C
6468 9322 107 41685 UDZ10B
6472 4822 130 61219 BZX79-B10
6474▲ 9340 559 53112 BYW95C-24
6480 4822 130 30621 1N4148
6481 3198 010 53390 BZX79-B33
6505 4822 130 42488 BYD33D
6511 4822 130 30621 1N4148
6512 4822 130 34173 BZX79-B5V6
6522 4822 130 42488 BYD33D
6701 4822 130 30621 1N4148
6904 4822 130 34142 BZX79-B33
6905 4822 130 34142 BZX79-B33
6911▲ 4822 130 31083 1N5062
6912▲ 4822 130 31083 1N5062
6913▲ 4822 130 31083 1N5062
6914▲ 4822 130 31083 1N5062
6915▲ 9322 132 55667 BRIDGE GBU4JL-7002 (G
6917 4822 130 32896 BYD33M
6921 4822 130 34142 BZX79-B33
6926 4822 130 42488 BYD33D
6928 4822 130 42488 BYD33D
6929 4822 130 42488 BYD33D
6932 4822 130 30621 1N4148
6938 4822 130 10218 BY229X-800
6941 4822 130 83865 SB360L-7003
6941 3922 136 58682 SB540L-7000
6942 4822 130 42488 BYD33D
6953 4822 130 34382 BZX79-B8V2
6954 4822 130 30621 1N4148
6955 4822 130 30621 1N4148
6961 3922 136 58682 SB560L-7000
6966 4822 130 31981 BZX79-B3V9
6971 4822 130 10256 EGP20DL-5300
6972 4822 130 10256 EGP20DL-5300
6973 4822 130 30621 1N4148
6977 9322 127 99685 UDZS5.1B
6986 4822 130 34281 BZX79-B15

7012 4822 130 40959 BC547B
7013 4822 130 44568 BC557B
7014 4822 130 40981 BC337-25
7015 4822 130 40981 BC337-25
7224 5322 130 60159 BC846B
7273 4822 130 60373 BC856B
7276 5322 130 60159 BC846B

7277	4822 130 60373	BC856B
7280	5322 130 60159	BC846B
7408	4822 130 41646	BF423
7410▲	9340 547 93127	BU4522AX
7440	4822 130 44568	BC557B
7470	4822 130 11336	STP16NE06FP
7478	4822 130 40959	BC547B
7480	4822 130 40959	BC547B
7481	4822 130 42159	BF819
7501	4822 209 61117	TDA8172
7513	5322 130 60159	BC846B
7701	5322 130 60159	BC846B
7702	9322 148 81667	AN5277
7703	4822 209 33165	TDA1308T/N1
7704	5322 130 60159	BC846B
7710	5322 130 60159	BC846B
7711	4822 130 60373	BC856B
7712	4822 130 60373	BC856B
7921▲	9322 140 38682	STR-F6454
7922	4822 130 60373	BC856B
7929▲	8238 274 02070	TCET1103G
7932	5322 130 60159	BC846B
7942	4822 209 80591	LM317T
7944	5322 130 60159	BC846B
7946	5322 130 60159	BC846B
7948	5322 130 60159	BC846B
7951	5322 130 60159	BC846B
7953	5322 130 60159	BC846B
7955	5322 130 60159	BC846B
7965	4822 130 40855	BC337
7967	9322 137 01682	SI-3050C
7971	4822 209 17243	SE130N(LF12)
7987	4822 130 60373	BC856B

CRT [B]

Various

0084▲	2422 500 80053	CON 9P
0084▲	2422 500 80058	CON 9P
0217	4822 267 10735	con 3P
0238	4822 267 10735	con 3P
0243	2422 025 12482	CON 6P
0244	4822 267 10734	con 5P

2830	4822 121 51473	470nF 20% 63V
2831	4822 126 13599	3.3nF 10% 500V
2835	4822 126 13838	100nF 20% 50V
2836	4822 121 43897	1nF 5% 400V
2840	4822 124 11565	10µF 20% 250V
2843▲	4822 126 13451	2.2nF 10% 2KV
2844▲	4822 126 13692	47pF 1% 63V 0805
2845▲	4822 126 13692	47pF 1% 63V 0805
2846▲	4822 126 13692	47pF 1% 63V 0805
2860	4822 124 40207	100µF 20% 25V
2861	5322 122 32658	22pF 5% 50V
2862	4822 126 13689	18pF 1% 63V
2863	4822 126 13486	15pF 2% 63V
2864	4822 121 51252	470nF 5% 63V
2865	5322 122 32448	10pF 5% 63V
2866	4822 126 13482	470nF 20% 16V
2867	5322 126 10733	680pF 5% 50V
2868	5322 122 32531	100pF 5% 50V
2869	4822 121 40334	100nF 10% 100V
2870	5322 122 32654	22nF 10% 63V
2871	4822 124 40764	22µF 100 V
2872	4822 122 31177	470pF 10% 500V
2872▲	4822 126 13829	120P 10% 500V
2873	4822 121 40516	22nF 10% 250V
2874	4822 126 13693	56pF 1% 63V
2876	4822 124 40248	10µF 20% 63V
2877	4822 051 20008	0R00 JUMP
2877	5322 122 32658	22pF 5% 50V
2878	4822 122 33172	390pF 5% 50V

3831	4822 116 52175	100Ω 5% 0.5W
3832	3198 013 01020	1k 2% 0.5W
3833	4822 116 52175	100Ω 5% 0.5W
3834	3198 013 01020	1k 2% 0.5W
3835	4822 116 52175	100Ω 5% 0.5W
3836	3198 013 01020	1k 2% 0.5W
3837	4822 051 20561	560Ω 5% 0.1W 0805
3837	4822 051 20008	JUMPER 0805
3838	4822 051 20561	560Ω 5% 0.1W 0805
3838	4822 051 20008	JUMPER 0805
3839	4822 051 20561	560Ω 5% 0.1W 0805
3839	4822 051 20008	JUMPER 0805
3840▲	4822 052 10101	100Ω 5% 0.33W
3841▲	4822 052 10108	1Ω 5% 0.33W
3841▲	4822 052 10128	1Ω2 5% 0.33W
3842▲	4822 052 10108	1Ω 5% 0.33W
3842▲	4822 052 10128	1Ω2 5% 0.33W
3843	3198 013 01520	1k 2% 0.5W
3845	4822 116 52272	330k 5% 0.5W
3860▲	4822 052 10109	10Ω 5% 0.33W
3861	4822 051 20332	3k3 5% 0.1W
3862	4822 051 20332	3k3 5% 0.1W
3863	4822 051 20332	3k3 5% 0.1W
3864	4822 051 20561	560Ω 5% 0.1W
3864	4822 117 11503	220Ω 1% 0.1W
3865	4822 117 10833	10k 1% 0.1W
3865	4822 117 10965	18k 1% 0.1W
3866	4822 117 11139	1k5 1% 0.1W
3866	4822 117 11449	2k2 5% 0.1W
3867	4822 116 52176	10Ω 5% 0.5W
3869	4822 051 20008	0Ω jumper (0805)
3869	4822 051 20109	10Ω 5% 0.1W
3870	4822 116 52231	820Ω 5% 0.5W
3870	4822 117 11454	820Ω 1% 0.1W
3871	4822 116 52291	56k 5% 0.5W
3871	4822 117 11148	56k 1% 0.1W
3872	4822 117 11148	56k 1% 0.1W
3873	4822 117 11454	820Ω 1% 0.1W
3874	4822 117 13424	8k2 5% 5W
3875	4822 051 20122	1k2 5% 0.1W
3875	4822 051 20562	5k6 5% 0.1W
3875	4822 051 20562	5k6 5% 0.1W
3875	4822 117 11449	2k2 5% 0.1W 0805
3876	4822 051 20109	10Ω 5% 0.1W
3877	4822 051 20008	0Ω jumper (0805)
3877	4822 051 20101	100Ω 5% 0.1W
3878	4822 051 20471	470Ω 5% 0.1W
3880	4822 116 52176	10Ω 5% 0.5W
3880	4822 116 52195	47Ω 5% 0.5W
3880	4822 116 52199	68Ω 5% 0.5W
3881	4822 051 20008	0Ω jumper (0805)
3882	4822 116 83872	220Ω 5% 0.5W
3885	4822 117 11449	2k2 5% 0.1W
3886	2322 194 63338	3Ω3 5%
3886	4822 051 20561	560Ω 5% 0.1W
3887	2322 194 63338	3Ω3 5%
3888	4822 051 20008	0Ω jumper (0805)
3888	4822 051 20561	560Ω 5% 0.1W
3890	4822 051 20561	560Ω 5% 0.1W
4xxx	4822 051 10008	0Ω 5% 0.25W (1206)
4xxx	4822 051 20008	0Ω 5% 0.25W (0805)

5842	4822 157 63788	18µH 10%
5860	4822 157 63507	0.18µH
5861	4822 157 63507	0.18µH
5862	4822 157 51216	5.6µH
5886	4822 320 40309	coil SDL102201B3B
5888	4822 320 40309	coil SDL102201B3B
5890	4822 320 40309	coil SDL102201B3B

6831	4822 130 30842	BAV21
6832	4822 130 83757	BAS216
6833	4822 130 30842	BAV21
6835	4822 130 30842	BAV21
6837	4822 130 82969	BZD23-C24
6838	4822 130 82969	BZD23-C24
6861	4822 130 83757	BAS216
6862	4822 130 83757	BAS216
6863	4822 130 30621	1N4148
6867	4822 130 30621	1N4148
6868	4822 130 30621	1N4148
6869	4822 130 31981	BZX79-B3V9

7830	9352 561 40112	TDA6108
7860	4822 130 44154	BF199
7861	4822 130 42589	BF370
7862	4822 130 41617	BD830
7863	4822 130 41616	BD829
7864	4822 130 44568	BC557B
7865	9340 350 20116	BFQ151

SSB [C]

Various

0205	2422 025 16677	CON 10P
0238	2422 025 16835	CON 3P
1327	2422 543 01095	XTAL 12MHz
1333	2422 549 44311	FIL 5M8/6M5 TPWCC16B
1451	2422 549 44388	FIL SAW 38.9MHz OFWK7265L
1451	2422 549 44377	FIL SAW 45.75MHz OFWM1967L
1455	2422 549 44389	FIL SAW 38.9MHz OFWK9361L
1630	2422 543 01059	X-tal 18.432MHz

2010	3198 016 38210	820pF 25V
2014	3198 017 41050	1µF 10V
2015	3198 017 41050	1µF 10V
2016	4822 126 14305	100nF 10% 16V
2017	4822 126 14305	100nF 10% 16V
2018	4822 126 14238	2n2 50V
2043	3198 030 74780	4U7 20% 35V
2044	4822 126 14305	100nF 10% 16V
2045	4822 126 14507	18pF 5% 50V
2046	4822 126 14507	18pF 5% 50V
2049	4822 126 13879	220nF 20% 16V
2050	4822 122 31765	100pF 2% 63V
2051	4822 126 14305	100nF 10% 16V
2053	4822 124 23002	10µF 16V
2058	4822 126 14305	100nF 10% 16V
2301	3198 017 41050	1µF 10V
2302	4822 126 14241	330pF 0603
2303	4822 126 13193	4.7nF 0603
2304	3198 030 74780	4u7 20% 35V
2306	5322 126 11583	10nF 10% 50V
2309	4822 126 14305	100nF 10% 16V
2311	3198 017 41050	1µF 10V
2312	5322 126 11583	10nF 10% 50V
2313	4822 126 14305	100nF 10% 16V
2314	4822 121 70159	0.1µF 16V
2316	4822 126 14494	22nF 10% 25V
2317	4822 126 13879	220nF 20% 16V
2319	4822 126 14305	100nF 10% 16V
2321	4822 126 13193	4.7nF 0603
2322	4822 124 23002	10µF 16V
2323	3198 017 42230	22nF 50V
2324	4822 126 14305	100nF 10% 16V
2325	3198 017 42230	22nF 50V
2326	3198 017 42230	22nF 50V
2327	4822 126 11671	33pF
2328	4822 126 11671	33pF
2332	4822 126 13879	220nF 20% 16V
2333	4822 126 14305	100nF 10% 16V
2334	4822 126 14305	100nF 10% 16V
2335	3198 017 41050	1µF 10V
2338	4822 126 14238	2n2 50V
2342	4822 122 33752	15pF 5% 50V
2345	4822 122 33752	15pF 5% 50V
2348	4822 122 33752	15pF 5% 50V
2350	3198 030 74780	4u7 20% 35V
2354	3198 017 44740	470nF 10V
2355	3198 017 44740	470nF 10V
2356	3198 017 44740	470nF 10V
2357	4822 122 33741	10pF 10% 50V
2360	5322 126 11583	10nF 10% 50V
2372	4822 126 13193	4.7nF 10% 63V
2373	5322 124 90403	1µF 50V
2374	4822 126 14494	22nF 10% 25V
2375	3198 016 31020	1nF 25V
2376	3198 016 31020	1nF 25V
2377	3198 016 31020	1nF 25V
2380	4822 124 23002	10µF 16V
2401	3198 017 41050	1µF 10V
2402	3198 017 41050	1µF 10V
2403	3198 017 41050	1µF 10V
2404	4822 126 14494	22nF 10% 25V
2405	4822 126 14494	22nF 10% 25V
2407	4822 126 14305	100nF 10% 16V
2408	4822 126 14305	100nF 10% 16V
2412	4822 126 13879	220nF 20% 16V
2415	4822 126 13879	220nF 20% 16V
2417	4822 124 23002	10µF 16V
2420	4822 122 31765	100pF 2% 63V
2421	4822 124 23002	10µF 16V
2422	4822 126 14305	100nF 10% 16V
2423	3198 017 34730	47nF 16V
2424	4822 122 31765	100pF 2% 63V
2425	4822 122 31765	100pF 2% 63V
2426	3198 017 41050	1µF 10V
2428	3198 017 34730	47nF 16V
2433	5322 126 11583	10nF 10% 50V
2434	5322 126 11583	10nF 10% 50V
2441	4822 126 14305	100nF 10% 16V
2442	4822 126 13879	220nF 20% 16V
2443	5322 126 11583	10nF 10% 50V

2444	5322 126 11583	10nF 10% 50V
2445	5322 126 11583	10nF 10% 50V
2446	5322 126 11583	10nF 10% 50V
2447	5322 126 11583	10nF 10% 50V
2449	4822 126 14305	100nF 10% 16V
2450	4822 124 23002	10µF 16V
2451	4822 124 23002	10µF 16V
2452	5322 126 11583	10nF 10% 50V
2453	5322 126 11583	10nF 10% 50V
2460	4822 124 23002	10µF 16V
2464	5322 126 11578	1nF 10% 50V
2601	4822 126 13881	470pF 5% 50V
2602	4822 126 14305	100nF 10% 16V
2606	4822 124 23002	10µF 16V
2607	4822 126 13879	220nF 20% 16V
2610	5322 126 11578	1nF 10% 50V
2611	5322 126 11578	1nF 10% 50V
2612	5322 126 11578	1nF 10% 50V
2613	5322 126 11578	1nF 10% 50V
2614	4822 126 13193	4.7nF 10% 63V
2619	4822 126 13193	4.7nF 10% 63V
2620	3198 017 41050	1µF 10V
2621	3198 017 41050	1µF 10V
2622	4822 124 23002	10µF 16V
2623	4822 124 23002	10µF 16V
2624	4822 126 14305	100nF 10% 16V
2625	5322 124 41945	22µF 20% 35V
2628	4822 126 14305	100nF 10% 16V
2629	4822 124 23002	10µF 16V
2631	3198 017 41050	1µF 10V
2632	4822 126 13193	4.7nF 10% 63V
2633	3198 017 41050	1µF 10V
2634	4822 126 13193	4.7nF 10% 63V
2635	3198 017 41050	1µF 10V
2636	4822 126 14241	330pF 50V
2637	3198 017 41050	1µF 10V
2638	4822 126 14241	330pF 50V
2639	4822 126 14241	330pF 50V
2640	3198 017 41050	1µF 10V
2641	4822 126 14241	330pF 50V
2642	3198 017 41050	1µF 10V
2655	4822 126 13193	4.7nF 10% 63V
2657	4822 124 23002	10µF 16V
2661	4822 126 14305	100nF 10% 16V
2662	4822 124 23002	10µF 16V
2663	4822 122 33777	47pF 5% 63V
2664	4822 126 14225	56pF 5% 50V
2665	4822 126 11669	27pF
2666	4822 126 14508	180pF 5% 50V
2667	4822 122 33752	15pF 5% 50V
2675	3198 016 33380	3.3pF 50V
2676	3198 016 33380	3.3pF 50V
2678	3198 017 41050	1µF 10V
2679	4822 126 14305	100nF 10% 16V
2682	3198 017 41050	1µF 10V
2683	3198 017 41050	1µF 10V
2684	3198 017 41050	1µF 10V
2685	3198 017 41050	1µF 10V
2686	3198 017 41050	1µF 10V
2687	3198 017 41050	1µF 10V

3002	4822 117 12902	8k2 1% 0.063W
3003	4822 051 30103	10k 5% 0.062W
3004	4822 117 12902	8k2 1% 0.063W
3007	4822 117 12902	8k2 1% 0.063W
3008	4822 117 12902	8k2 1% 0.063W
3009	4822 117 12902	8k2 1% 0.063W
3013	4822 117 12902	8k2 1% 0.063W
3014	4822 117 12902	8k2 1% 0.063W
3015	4822 051 30103	10k 5% 0.062W
3017	4822 051 30101	100Ω 5% 0.062W
3018	4822 051 30101	100Ω 5% 0.062W
3019	4822 051 30101	100Ω 5% 0.062W
3021	4822 051 30101	100Ω 5% 0.062W
3022	4822 051 30222	2k2 5% 0.062W
3023	4822 117 12902	8k2 1% 0.063W
3024	4822 051 30102	1k 5% 0.062W
3028	4822 117 12925	47k 1% 0.063W
3029	4822 051 30103	10k 5% 0.062W
3030	4822 051 30102	1k 5% 0.062W
3031	4822 051 30471	470Ω 5% 0.062W
3032	4822 051 30103	10k 5% 0.062W
3034	4822 117 12925	47k 1% 0.063W
3035	4822 051 30471	470Ω 5% 0.062W
3042	4822 051 30151	150Ω 5% 0.062W
3043	4822 051 30151	150Ω 5% 0.062W
3044	4822 051 30103	10k 5% 0.062W
3045	4822 051 30272	2k7 5% 0.062W
3046	4822 051 30472	4k7 5% 0.062W
3051	4822 117 13525	24k 1% 0.62W
3054	4822 051 30103	10k 5% 0.062W
3055	4822 051 30103	10k 5% 0.062W
3056	4822 117 12925	47k 1% 0.063W
3057	4822 051 30103	10k 5% 0.062W
3058	4822 051 30471	470Ω 5% 0.062W
3059	4822 051 30151	150Ω 5% 0.062W
3061	4822 051 30471	470Ω 5% 0.062W
3062	4822 051 30472	4k7 5% 0.062W
3063	4822 051 30102	1k 5% 0.062W
3064	4822 051 30472	4k7 5% 0.062W
3065	4822 051 30472	4k7 5% 0.062W
3066	4822 117 12902	8k2 1% 0.063W
3067	4822 051 30102	1k 5% 0.062W
3081	4822 051 30472	4k7 5% 0.062W
3082	4822 051 30103	10k 5% 0.062W
3083	4822 051 30471	470Ω 5% 0.062W
3084	4822 051 30101	100Ω 5% 0.062W
3085	4822 051 30101	100Ω 5% 0.062W
3086	4822 051 30101	100Ω 5% 0.062W
3088	4822 051 30101	100Ω 5% 0.062W
3090	4822 051 30103	10k 5% 0.062W
3091	4822 051 30103	10k 5% 0.062W
3092	4822 051 30101	100Ω 5% 0.062W
3094	4822 051 30103	10k 5% 0.062W
3301	4822 051 30102	1kΩ 0603
3302	4822 051 20561	560Ω 5% 0.1W
3306	4822 051 30102	1k 5% 0.062W
3311	4822 051 30273	27k 5% 0.062W
3312	4822 051 30103	10k 5% 0.062W
3315	4822 051 30393	39k 5% 0.062W
3316	4822 051 30681	680Ω 5% 0.062W
3324	4822 051 30391	390Ω 5% 0.062W
3326	4822 051 30102	1k 5% 0.062W
3327	4822 051 20561	560Ω 5% 0.1W
3329	4822 051 30101	100Ω 5% 0.062W
3330	4822 051 30101	100Ω 5% 0.062W
3331▲	4822 117 11748	NFR 2Ω2 5%
3332▲	4822 117 11748	NFR 2Ω2 5%
3333	4822 051 30681	680Ω 5% 0.062W
3334	4822 051 30471	470Ω 5% 0.062W
3335	4822 051 30121	120Ω 5% 0.062W
3339	4822 051 30103	10k 5% 0.062W
3340	4822 051 20561	560Ω 5% 0.1W
3341	4822 051 30151	150Ω 5% 0.062W
3342	4822 051 30008	0Ω jumper
3344	4822 051 30151	150Ω 5% 0.062W
3345	4822 051 30008	0Ω jumper
3348	4822 051 30151	150Ω 5% 0.062W
3349	4822 051 30008	0Ω jumper
3358	4822 051 30101	100Ω 5% 0.062W
3360	4822 051 30101	100Ω 5% 0.062W
3361	4822 051 30101	100Ω 5% 0.062W
3362	4822 051 30101	100Ω 5% 0.062W
3363	4822 051 30101	100Ω 5% 0.062W
3364	4822 051 30102	1k 5% 0.062W
3365	4822 051 20561	560Ω 5% 0.1W
3371	4822 051 30153	15k 5% 0.062W
3372	4822 051 30109	10Ω 5% 0.062W
3373	4822 051 30101	100Ω 5% 0.062W
3374	4822 051 30332	3k3 5% 0.062W
3375	4822 051 30102	1k 5% 0.062W
3376	4822 051 30102	1k 5% 0.062W
3377	4822 051 30101	100Ω 5% 0.062W
3378	4822 051 30102	1k 5% 0.062W
3381	4822 051 30101	100Ω 5% 0.062W
3382	4822 051 30101	100Ω 5% 0.062W
3383	4822 051 30101	100Ω 5% 0.062W
3384	4822 117 12902	8k2 1% 0.063W
3385	4822 051 30103	10k 5% 0.062W
3387	4822 051 30101	100Ω 5% 0.062W
3388	4822 051 30479	47Ω 5% 0.062W
3393	4822 051 20273	27k 5% 0.1W
3394	4822 051 30183	18k 5% 0.062W
3401	4822 051 30008	0Ω jumper
3402	4822 051 30008	0Ω jumper
3403	4822 051 30008	0Ω jumper
3404	4822 051 30101	100Ω 5% 0.062W
3405	4822 051 30101	100Ω 5% 0.062W
3406	4822 051 30103	10k 5% 0.062W
3407	4822 051 30103	10k 5% 0.062W
3408	4822 051 30103	10k 5% 0.062W
3411	4822 051 30152	1k5 5% 0.062W
3412	4822 051 30152	1k5 5% 0.062W
3413	4822 051 20561	560Ω 5% 0.1W
3414	4822 051 30152	1k5 5% 0.062W
3415	4822 051 30152	1k5 5% 0.062W
3416	4822 051 20561	560Ω 5% 0.1W
3417	4822 051 30102	1k 5% 0.062W
3418	4822 051 20561	560Ω 5% 0.1W
3419	4822 051 30101	100Ω 5% 0.062W
3420	4822 051 30101	100Ω 5% 0.062W
3423	4822 051 30102	1k 5% 0.062W
3425	4822 051 30102	1k 5% 0.062W
3426	4822 051 30102	1k 5% 0.062W
3427	4822 051 30101	100Ω 5% 0.062W
3428	4822 051 30101	100Ω 5% 0.062W
3431	4822 051 30223	22k 5% 0.062W
3432	4822 051 30393	39k 5% 0.062W
3432	4822 051 30223	22k 5% 0.062W
3435	4822 051 30223	22k 5% 0.062W
3435	4822 051 30183	18k 5% 0.062W
3436	4822 051 30273	27k 5% 0.062W
3436	4822 051 30153	15k 5% 0.062W
3439	4822 051 30103	10k 5% 0.062W
3443	4822 051 30008	0Ω jumper
3444	4822 117 12891	220k 1%
3452	4822 051 30223	22k 5% 0.062W
3453	4822 051 30183	18k 5% 0.062W
3455	4822 051 30682	6k8 5% 0.062W
3456	4822 051 30222	2k2 5% 0.062W
3457	4822 051 30273	27k 5% 0.062W
3458	4822 051 30183	18k 5% 0.062W
3461	4822 051 30222	2k2 5% 0.062W
3471	4822 051 30008	0Ω jumper
3472	4822 051 30008	0Ω jumper
3473	4822 051 30008	0Ω jumper
3474	4822 051 30008	0Ω jumper
3477	4822 051 30472	4k7 5% 0.062W
3480	4822 051 30102	1k 5% 0.062W
3481	4822 051 30103	10k 5% 0.062W
3482	4822 051 30153	15k 5% 0.062W
3485	4822 051 30479	47Ω 5% 0.062W
3601	4822 051 30101	100Ω 5% 0.062W
3602	4822 051 30101	100Ω 5% 0.062W
3606	4822 051 30273	27k 5% 0.062W
3619	4822 051 30101	100Ω 5% 0.062W
3621	4822 051 30101	100Ω 5% 0.062W
3665	4822 051 30222	2k2 5% 0.062W
4xxx	4822 051 10008	0Ω 5% 0.25W (1206)
4xxx	4822 051 20008	0Ω 5% 0.25W (0805)

5040	3198 018 64780	4u7 5%
5041	3198 018 64780	4u7 5%
5042	3198 018 64780	4u7 5%
5050	4822 157 11778	5U6 10%
5309	4822 157 71334	0.68µH
5332	4822 157 71334	0.68µH
5333	4822 157 71334	0.68µH
5334	4822 157 71334	0.68µH
5401	4822 157 71694	0U82 10%
5403	4822 157 71334	0.68µH
5421	4822 157 71334	0.68µH
5425	4822 157 71334	0.68µH
5435	4822 157 71334	0.68µH
5601	3198 018 61080	1U 5%
5602	3198 018 64780	4u7 5%
5625	3198 018 61080	1U 5%
5665	3198 018 61590	15U 5%

6020	4822 130 83649	1SS355
6031	4822 130 11518	UDZ2.4B
6302	4822 130 10837	UDZS8.2B
6303	9322 137 65685	UDZS6.8B
6307	4822 130 83649	1SS355
6401	4822 130 11525	1SS356
6412	4822 130 83649	1SS355
6415	4822 130 83649	1SS355
6417	4822 130 83649	1SS355
6418	4822 130 83649	1SS355
6419	4822 130 83649	1SS355
6420	4822 130 83649	1SS355
6605	4822 130 83649	1SS355

7022	3198 010 42310	BC847BW
7053	9340 425 20115	BC847BW
7063	3198 010 42310	BC847BW
7066	4822 209 17377	M24C32-WMN6
7070	9322 157 41671	UPD431000AGU-B1
7301	9352 626 19557	TDA 8885
7301	9352 638 72557	TDA 8887H/N1
7305	3198 010 42310	BC847BW
7307	3198 010 42310	BC847BW
7331	5322 130 42756	BC857C
7368	3198 010 42310	BC847BW
7401	9351 869 40118	74HC4053PW
7402	3198 010 42310	BC847BW
7403	9352 632 26118	TDA9171T/N1
7405	9352 630 99118	COMB FILTER TDA9181
7412	9340 425 20115	BC847BS
7413	3198 010 42310	BC847BW
7421	3198 010 42310	BC847BW

7442 3198 010 42310 BC847BW
7443 3198 010 42310 BC847BW description>
7444 4822 130 60383 BF824
7445 5322 130 42718 BFS20
7630 9351 874 90118 74HC4052PW
7651 9322 143 53671 MSP3415D-FH-B3
7651 9322 149 63671 MSP3451G-FH-A1
7651 9322 143 55671 MSP3435G-FH-B5

SIDE I/O [D]

Various

0240 2422 025 12485 CON 11P
0306 3139 124 30421 SIDE AV BRACKET
1254 4822 267 31014 HEADPHONE SOCKET
1255 4822 265 11606 CON 3P
1256 2422 026 04926 SOC 4P

2286 4822 122 33642 150pF 5% 50V
2288 4822 122 33642 150pF 5% 50V
2292 5322 122 32311 470pF 10% 100V
2294 5322 122 32311 470pF 10% 100V
2296 4822 122 31125 4.7nF 20% 63V
2297 4822 122 31125 4.7nF 20% 63V

3285 4822 116 52201 75Ω 5% 0.5W
3286 4822 116 52176 10Ω 5% 0.5W
3287 4822 116 52201 75Ω 5% 0.5W
3288 4822 116 52176 10Ω 5% 0.5W
3289 4822 116 52249 1k8 5% 0.5W
3291 4822 050 11002 1k 1% 0.4W
3292 4822 117 10834 47k 1% 0.1W
3293 4822 050 11002 1k 1% 0.4W
3294 4822 117 10834 47k 1% 0.1W
3295 4822 116 52276 3k9 5% 0.5W
3296 4822 117 10833 10k 1% 0.1W
3297 4822 117 10833 10k 1% 0.1W

6291 9340 548 61115 PDZ12B
6292 9340 548 61115 PDZ12B
6293 9340 548 61115 PDZ12B
6294 9340 548 61115 PDZ12B

TOP CONTROL [E]

Various

0027▲ 3139 124 30381 TOP CONTROL BRACKET
0080 3139 137 66921 TOP CONTROL BUTTON
0215 4822 267 10748 CON 3P
1091 4822 276 13775 SWITCH
1092 4822 276 13775 SWITCH
1093 4822 276 13775 SWITCH
1094 4822 276 13775 SWITCH

3091 4822 051 20561 560Ω 5% 0.1W
3092 4822 051 20391 390Ω 5% 0.1W
3093 4822 051 20561 560Ω 5% 0.1W
3094 4822 117 11504 270Ω 1% 0.1W
3095 4822 051 20332 3k3 5% 0.1W
3096 4822 117 11139 1k5 1% 0.1W

6091 4822 130 31983 BAT85

DW [F]

Various

0171 3139 121 07981 PHONO TO PHONO
0174▲ 3139 124 31671 PIP BRACKET
0200 4822 267 10734 CON 5P
0201 4822 267 10557 CON 10P
0205 2422 025 16587 CON 10P
0207 4822 267 10565 CON 4P
0209 2422 025 12482 CON 6P
0236 4822 267 10735 CON 3P
0272 4822 267 10735 CON 3P
1327 4822 242 10694 XTAL 12 MHz
1333 2422 549 44311 FIL 5M8/6M5 TPWCC16B
1352 2422 549 43074 FIL SAW 45M75 OFWM1962M
1352 2422 549 44223 FIL SAW 38M90 OFWK7260M

2261 4822 124 40207 100μF 20% 25V
2262 5322 126 10511 1nF 5% 50V
2265 4822 124 40207 100μF 20% 25V
2269 4822 126 13751 47nF 10% 63V
2301 3198 017 41050 1μF 10V 0603
2302 5322 126 10184 820P 5% 50V
2303 5322 126 10223 4.7nF 10% 63V
2306 5322 126 11583 10nF 10% 50V 0603
2309 4822 126 14585 100nF 10% 50V
2311 3198 017 41050 1μF 10V 0603
2312 4822 122 33177 10nF 20% 50V
2313 4822 126 14585 100nF 10% 50V
2314 4822 126 14585 100nF 10% 50V
2316 4822 126 14494 22nF 10% 25V 0603
2317 4822 126 13879 220nF 20% 16V
2319 4822 126 14305 100nF 10% 16V 0603
2321 5322 126 10223 4.7nF 10% 63V
2321 5322 126 10465 3.9nF 10% 50V
2322 4822 124 40248 10μF 20% 63V
2324 4822 126 14585 100nF 10% 50V
2327 4822 126 11671 33pF
2328 4822 126 11671 33pF
2331 4822 124 22652 2.2μF 20% 50V
2332 4822 126 14076 220nF 25V
2333 4822 126 14305 100nF 10% 16V 0603
2334 5322 122 32654 22nF 10% 63V
2335 4822 126 14043 1μF 20% 16V
2336 5322 126 10184 820P 5% 50V
2338 4822 122 33127 2.2nF 10% 63V
2342 4822 126 13692 47pF 1% 63V
2345 4822 126 13692 47pF 1% 63V
2348 4822 122 33777 47pF 5% 63V
2349 4822 122 33177 10nF 20% 50V
2350 4822 124 40248 10μF 20% 63V
2351 4822 122 33177 10nF 20% 50V
2354 4822 126 13482 470nF 80/20% 16V
2355 3198 017 41050 1μF 10V 0603
2356 4822 126 13482 470nF 80/20% 16V
2357 5322 122 32448 10pF 5% 63V
2372 5322 126 10223 4.7nF 10% 63V
2373 4822 124 21913 1μF 20% 63V
2374 5322 122 32654 22nF 10% 63V
2375 5322 126 10511 1nF 5% 50V
2376 5322 126 10511 1nF 5% 50V
2377 5322 126 10511 1nF 5% 50V
2380 4822 124 40248 10μF 20% 63V
2385 4822 126 13881 470pF 5% 50V
2386 4822 126 13881 470pF 5% 50V
2390 4822 122 33777 47pF 5% 63V
2391 4822 122 31765 100pF 2% 63V
2392 4822 122 33777 47pF 5% 63V
2393 3198 016 31020 1nF 25V 0603
2401 3198 017 41050 1μF 10V 0603
2402 3198 017 41050 1μF 10V 0603
2403 3198 017 41050 1μF 10V 0603
2404 3198 017 41050 1μF 10V 0603
2405 3198 017 41050 1μF 10V 0603
2411 4822 124 40248 10μF 20% 63V
2412 4822 126 13879 220nF 20% 16V
2415 4822 126 13879 220nF 20% 16V
2431 4822 126 14305 100nF 10% 16V 0603
2432 4822 126 14305 100nF 10% 16V 0603
2434 4822 126 14305 100nF 10% 16V 0603
2436 4822 124 40207 100μF 20% 25V
2437 3198 016 31020 1nF 25V 0603
2811 4822 126 14305 100nF 10% 16V 0603
2812 4822 126 14305 100nF 10% 16V 0603
2813 4822 122 33753 150pF 5% 50V
2814 4822 126 13838 100nF 50V 20%
2816 4822 124 40248 10μF 20% 63V
2817 4822 126 13838 100nF 50V 20%
2818 4822 126 13838 100nF 50V 20%
2819 4822 126 13838 100nF 50V 20%
2821 4822 124 40248 10μF 20% 63V
2822 4822 126 13838 100nF 50V 20%
2823 4822 126 14305 100nF 10% 16V 0603
2824 4822 126 14305 100nF 10% 16V 0603
2825 5322 122 33538 150pF 2% 63V
2826 4822 126 13838 100nF 20% 50V
2827 4822 124 40207 100μF 20% 25V
2828 4822 126 14305 100nF 10% 16V 0603
2829 4822 126 13838 100nF 20% 50V
2831 4822 126 14043 1μF 20% 16V CASE
2832 4822 126 14043 1μF 20% 16V CASE
2833 4822 126 14305 100nF 10% 16V 0603
2834 4822 124 40248 10μF 20% 63V
2836 4822 126 14305 100nF 10% 16V 0603
2837 4822 126 13838 100nF 50V 20%
2838 4822 124 11912 220μF 20% 6.3V
2838 4822 124 40248 10μF 20% 63V
2839 4822 126 13838 100nF 50V 20%
2841 4822 124 40248 10μF 20% 63V
2842 4822 122 33753 150pF 5% 50V
2843 4822 126 14305 100nF 10% 16V 0603
2844 4822 126 14305 100nF 10% 16V 0603
2846 4822 126 13838 100nF 50V 20%
2847 5322 122 33538 150pF 2% 63V
2848 4822 126 13838 100nF 50V 20%
2849 4822 126 13838 100nF 50V 20%
2851 4822 124 40248 10μF 20% 63V
2852 4822 126 14585 100nF 10% 50V
2853 4822 124 40248 10μF 20% 63V
2854 4822 126 13838 100nF 50V 20%
2856 5322 122 33538 150pF 2% 63V
2857 4822 122 33753 150pF 5% 50V
2861 4822 124 40248 10μF 20% 63V
2862 4822 126 14305 100nF 10% 16V 0603
2863 4822 124 81151 22μF 50V
2864 3198 017 34730 47nF 16V 0603
2866 3198 017 34730 47nF 16V 0603
2867 3198 017 41050 1μF 10V 0603
2868 4822 126 14305 100nF 10% 16V 0603
2869 4822 124 40207 100μF 20% 25V
2871 3198 017 41050 1μF 10V 0603
2872 3198 017 34730 47nF 16V 0603
2873 3198 017 34730 47nF 16V 0603
2874 4822 051 30008 0R00 JUMPER
2876 3198 017 34730 47nF 16V 0603
2877 3198 017 34730 47nF 16V 0603
2878 4822 126 13838 100nF 50V 20%
2891 5322 122 31647 1nF 10% 63V
2898 4822 124 40207 100μF 20% 25V
2899 4822 124 40207 100μF 20% 25V

3263 4822 117 11449 2k2 5% 0.1W 0805
3264 4822 117 10833 10k 1% 0.1W
3267 4822 051 20479 47Ω 5% 0.1W
3268 4822 051 20479 47Ω 5% 0.1W
3270 4822 051 20008 0Ω jumper 0805
3301 4822 051 30102 1k 5% 0.062W
3305 4822 117 12955 2k7 1% 0.1W 0805
3311 4822 051 20273 27k 5% 0.1W
3312 4822 117 10833 10k 1% 0.1W
3315 4822 117 12708 39k 1% 0.1W 0805 RC12G
3316 4822 051 30681 680Ω 5% 0.062W
3318 4822 051 30101 100Ω 5% 0.062W
3321 4822 051 30103 10k 5% 0.062W
3322 4822 117 12902 8k2 1% 0.063W 0603
3324 4822 051 20391 390Ω 5% 0.1W
3326 5322 117 12487 1k 1% 0.125W
3327 4822 051 30561 560Ω 5% 0.062W
3329 4822 051 20101 100Ω 5% 0.1W
3330 4822 051 20101 100Ω 5% 0.1W
3333 4822 051 30681 680Ω 5% 0.062W
3334 4822 051 30471 470Ω 5% 0.062W
3335 4822 051 20121 120Ω 5% 0.1W
3338 4822 051 20008 0Ω jumper 0805
3338 4822 051 20391 390Ω 5% 0.1W
3339 4822 117 10833 10k 1% 0.1W
3340 4822 051 30222 2k2 5% 0.062W
3341 4822 051 20479 47Ω 5% 0.1W
3344 4822 051 20479 47Ω 5% 0.1W
3345 4822 051 30479 47Ω 5% 0.062W
3346 4822 051 30561 560Ω 5% 0.062W
3348 4822 051 30008 0Ω jumper
3349 4822 051 30479 47Ω 5% 0.062W
3352 4822 051 30222 2k2 5% 0.062W
3353 4822 051 30682 6k8 5% 0.062W
3354 4822 051 30222 2k2 5% 0.062W
3355 4822 051 30273 27k 5% 0.062W
3356 4822 051 30183 18k 5% 0.062W
3364 4822 051 30102 1k 5% 0.062W
3365 5322 117 12487 1k 1% 0.125W
3370 4822 051 20101 100Ω 5% 0.1W
3371 4822 116 83933 15k 1% 0.1W
3372 4822 051 30008 0Ω jumper
3372 4822 051 30101 100Ω 5% 0.062W
3374 4822 051 30472 4k7 5% 0.062W
3381 4822 051 20101 100Ω 5% 0.1W
3382 4822 051 20101 100Ω 5% 0.1W
3383 4822 051 20101 100Ω 5% 0.1W
3384 4822 051 30103 10k 5% 0.062W
3385 4822 051 30472 4k7 5% 0.062W

3386	4822 051 30103	10k 5% 0.062W
3387	4822 051 30393	39k 5% 0.062W
3388	4822 051 30103	10k 5% 0.062W
3389	4822 051 30472	4k7 5% 0.062W
3390	4822 051 30471	470Ω 5% 0.062W
3401	4822 051 30101	100Ω 5% 0.062W
3402	4822 051 30101	100Ω 5% 0.062W
3403	4822 051 20101	100Ω 5% 0.1W
3404	4822 051 30101	100Ω 5% 0.062W
3405	4822 051 20101	100Ω 5% 0.1W
3411	4822 117 12925	47k 1% 0.063W 0603
3412	4822 117 12925	47k 1% 0.063W 0603
3413	4822 051 30102	1k 5% 0.062W
3414	4822 117 12925	47k 1% 0.063W 0603
3415	4822 117 12925	47k 1% 0.063W 0603
3416	4822 051 30102	1k 5% 0.062W
3417	4822 051 20101	100Ω 5% 0.1W
3418	4822 051 20101	100Ω 5% 0.1W
3419	4822 051 20561	560Ω 5% 0.1W
3422	4822 051 20561	560Ω 5% 0.1W
3423	4822 051 20561	560Ω 5% 0.1W
3424	4822 051 20561	560Ω 5% 0.1W
3431	4822 051 30101	100Ω 5% 0.062W
3432	4822 051 30101	100Ω 5% 0.062W
3451	4822 051 30472	4k7 5% 0.062W
3453	4822 051 30472	4k7 5% 0.062W
3456	4822 051 30472	4k7 5% 0.062W
3457	4822 051 30472	4k7 5% 0.062W
3460	4822 051 30472	4k7 5% 0.062W
3461	4822 051 30472	4k7 5% 0.062W
3462	4822 052 10228	2Ω2 5% 0.33W
3801	4822 117 11503	220Ω 1% 0.1W
3802	4822 117 10361	680Ω 1% 0.1W
3803	4822 117 11503	220Ω 1% 0.1W
3804	4822 051 30681	680Ω 5% 0.062W
3805	4822 051 30221	220Ω 5% 0.062W
3806	4822 051 30681	680Ω 5% 0.062W
3807	4822 051 30221	220Ω 5% 0.062W
3808	4822 117 10361	680Ω 1% 0.1W
3809	4822 051 30221	220Ω 5% 0.062W
3810	4822 051 30681	680Ω 5% 0.062W
3811	4822 117 11503	220Ω 1% 0.1W
3812	4822 051 30479	47Ω 5% 0.062W
3813	4822 051 30151	150Ω 5% 0.062W
3814	4822 051 30223	22k 5% 0.062W
3816	4822 051 30479	47Ω 5% 0.062W
3817	4822 051 30151	150Ω 5% 0.062W
3818	4822 051 30479	47Ω 5% 0.062W
3821	4822 051 30151	150Ω 5% 0.062W
3822	4822 051 30472	4k7 5% 0.062W
3823	4822 117 10361	680Ω 1% 0.1W
3824	4822 051 30008	0Ω jumper
3825	4822 051 30221	220Ω 5% 0.062W
3826	4822 051 30332	3k3 5% 0.062W
3827	4822 117 12903	1k8 1% 0.063W 0603
3828	4822 051 30221	220Ω 5% 0.062W
3829	4822 051 30221	220Ω 5% 0.062W
3831	4822 051 30221	220Ω 5% 0.062W
3832	4822 051 30393	39k 5% 0.062W
3833	4822 051 30332	3k3 5% 0.062W
3834	4822 117 12903	1k8 1% 0.063W 0603
3836	4822 051 30332	3k3 5% 0.062W
3837	4822 117 12903	1k8 1% 0.063W 0603
3838	4822 051 30393	39k 5% 0.062W
3839	4822 117 11503	220Ω 1% 0.1W
3846	4822 117 11503	220Ω 1% 0.1W
3852	4822 051 30101	100Ω 5% 0.062W
3854	4822 051 30101	100Ω 5% 0.062W
3856	4822 051 20562	5k6 5% 0.1W 0805
3857	4822 117 10833	10k 1% 0.1W
3858	4822 051 20562	5k6 5% 0.1W 0805
3860	4822 051 30008	0Ω jumper
3862	4822 052 10108	1Ω 5% 0.33W
3863	4822 052 10108	1Ω 5% 0.33W
3866	4822 051 30102	1k 5% 0.062W
3868	4822 117 12903	1k8 1% 0.063W 0603
3869	4822 051 30332	3k3 5% 0.062W
3871	4822 051 30222	2k2 5% 0.062W
3872	4822 051 30471	470Ω 5% 0.062W
3873	4822 051 30152	1k5 5% 0.062W
3874	4822 051 30152	1k5 5% 0.062W
3876	4822 051 20472	4k7 5% 0.1W
3878	4822 051 30102	1k 5% 0.062W
3879	4822 051 30221	220Ω 5% 0.062W
3880	4822 051 30221	220Ω 5% 0.062W
3881	4822 051 30391	390Ω 5% 0.062W
3884	4822 117 10361	680Ω 1% 0.1W
3886	4822 051 30008	0Ω jumper
3887	4822 051 30008	0Ω jumper
3888	4822 051 30008	0Ω jumper
3889	4822 051 30008	0Ω jumper
3890	4822 051 30008	0Ω jumper
3891	4822 051 30008	0Ω jumper
3892	4822 051 20472	4k7 5% 0.1W
3893	4822 051 30152	1k5 5% 0.062W
3894	4822 051 30222	2k2 5% 0.062W
3895	4822 051 30471	470Ω 5% 0.062W
3896	4822 051 30152	1k5 5% 0.062W
3897	4822 051 30221	220Ω 5% 0.062W
3898	4822 051 30102	1k 5% 0.062W
4xxx	4822 051 10008	0Ω 5% 0.25W (1206)
4xxx	4822 051 20008	0Ω 5% 0.25W (0805)

5261	4822 157 11778	5U6 10% 0805
5309	4822 157 71334	0.68μH
5332	4822 157 71334	0.68μH
5333	4822 157 71334	0.68μH
5334	4822 157 71334	0.68μH
5349	4822 157 71694	0U82 10%
5350	3198 018 61590	15U 5% 1008
5351	3198 018 61590	15U 5% 1008
5352	4822 157 71334	0.68μH
5401	3198 018 74780	4U7 20%
5401	4822 157 53139	4.7μH
5816	4822 157 11506	BLM21A121SPT
5818	4822 157 11506	BLM21A121SPT
5827	4822 157 11506	BLM21A121SPT
5834	4822 157 11506	BLM21A121SPT
5839	4822 157 11506	BLM21A121SPT
5848	4822 157 11506	BLM21A121SPT
5849	4822 157 11506	BLM21A121SPT
5851	4822 157 11506	BLM21A121SPT
5853	4822 157 11506	BLM21A121SPT

6301	4822 130 11525	1SS356
6412	4822 130 83649	1SS355
6415	4822 130 83649	1SS355
6801	4822 130 11564	UDZ3.9B
6802	4822 130 11564	UDZ3.9B

7201	2422 542 90075	TUNER TEDE9X700A ALPS
7201	2422 542 90077	TUNER TEDH9X700A ALPS
7301	9352 638 72557	TDA8887H/N1
7301	9352 638 73557	TDA8889H/N1
7305	3198 010 42310	BC847BW
7307	3198 010 42310	BC847BW
7331	5322 130 42756	BC857C
7332	3198 010 42310	BC847BW
7368	3198 010 42310	BC847BW
7385	3198 010 42310	BC847BW
7386	3198 010 42310	BC847BW
7401	5322 209 14481	HEF4053BT
7403	4822 209 17345	M62320FP
7411	3198 010 42310	BC847BW
7412	3198 010 42310	BC847BW
7801	9352 639 81557	SAB9081H/N4
7802	4822 209 80591	LM317T
7803	4822 209 12776	TDA8601T/C1
7804	9352 457 50115	74HC1G32GW
7805	3198 010 42310	BC847BW
7806	3198 010 42310	BC847BW
7807	3198 010 42310	BC847BW
7808	3198 010 42310	BC847BW
7809	3198 010 42310	BC847BW
7810	3198 010 42310	BC847BW
7824	3198 010 42310	BC847BW
7828	3198 010 42310	BC847BW
7871	3198 010 42310	BC847BW
7874	3198 010 42310	BC847BW
7876	5322 130 42756	BC857C
7891	3198 010 42310	BC847BW
7892	3198 010 42310	BC847BW
7893	3198 010 42310	BC847BW
7894	5322 130 42756	BC857C
7895	3198 010 42310	BC847BW

DAF [G]

Various

0301	4822 402 11113	MAINS FILTER BRACKET

2492▲	4822 126 13865	390pF 10% 2KV
2493▲	4822 126 13865	390pF 10% 2KV

3498	2322 592 13017	VDR 1M/423V
3499	2322 592 13017	VDR 1M/423V

5493▲	4822 148 81425	DAF

FRONT INTERFACE [J]

Various

0132▲	4822 276 14024	POWER SWITCH
0214	2422 025 06353	CON 5P
1002	9322 127 54667	TSOP1836UH1
1008▲	9322 050 99682	LED 10224WHCR

2001	4822 124 40207	100μF 20% 25V
2002	4822 122 30043	10nF 80% 63V

3003	4822 116 52228	680Ω 5% 0.5W
3004	4822 116 80176	1Ω 5% 0.5W
3008	4822 053 21475	4M7 5% 0.5W
3009	4822 053 21225	2M2 5% 0.5W

FRONT INTERFACE [Q]

Various

0132▲	4822 276 14024	POWER SWITCH
0187▲	3139 124 30431	FRONT INTERFACE BRACKET
0187▲	3139 124 33461	FRONT INTERFACE BRACKET
0214	2422 025 06353	CON 5P
0240	2422 025 10738	CON 6P
1002	9322 127 54667	TSOP1836UH1
1003	4822 276 13775	SWITCH
1004	4822 276 13775	SWITCH
1005	4822 276 13775	SWITCH
1006	4822 276 13775	SWITCH
1008▲	9322 050 99682	LED 10224WHCR
1254	4822 267 31014	HEADPHONE SOCKET

2001	4822 124 40207	100μF 20% 25V
2081	5322 122 34098	10nF 10% 63V
2082	5322 122 34098	10nF 10% 63V

3002	4822 116 52228	680Ω 5% 0.5W
3003	4822 117 10361	680Ω 1% 0.1W
3004	4822 116 80176	1Ω 5% 0.5W
3008	4822 053 21475	4M7 5% 0.5W
3009	4822 053 21225	2M2 5% 0.5W
3021	4822 051 20561	560Ω 5% 0.1W
3022	4822 051 20391	390Ω 5% 0.1W
3023	4822 051 20561	560Ω 5% 0.1W
3024	4822 117 11504	270Ω 1% 0.1W
3025	4822 051 20332	3k3 5% 0.1W
3026	4822 117 11139	1k5 1% 0.1W
3081	4822 117 10833	10k 1% 0.1W
3082	4822 117 10833	10k 1% 0.1W
3083	4822 051 20392	3k9 5% 0.1W

6005	4822 130 31983	BAT85

GEOMAGNETIC [R]

Various

0225	4822 267 10565	CON 4P
0239	4822 267 10748	CON 3P
0249	4822 267 10567	CON 4P

2420	4822 124 40207	100µF 20% 25V
2421	4822 124 40207	100µF 20% 25V
2422	5322 121 42386	100nF 5% 63V
2423	5322 121 42386	100nF 5% 63V

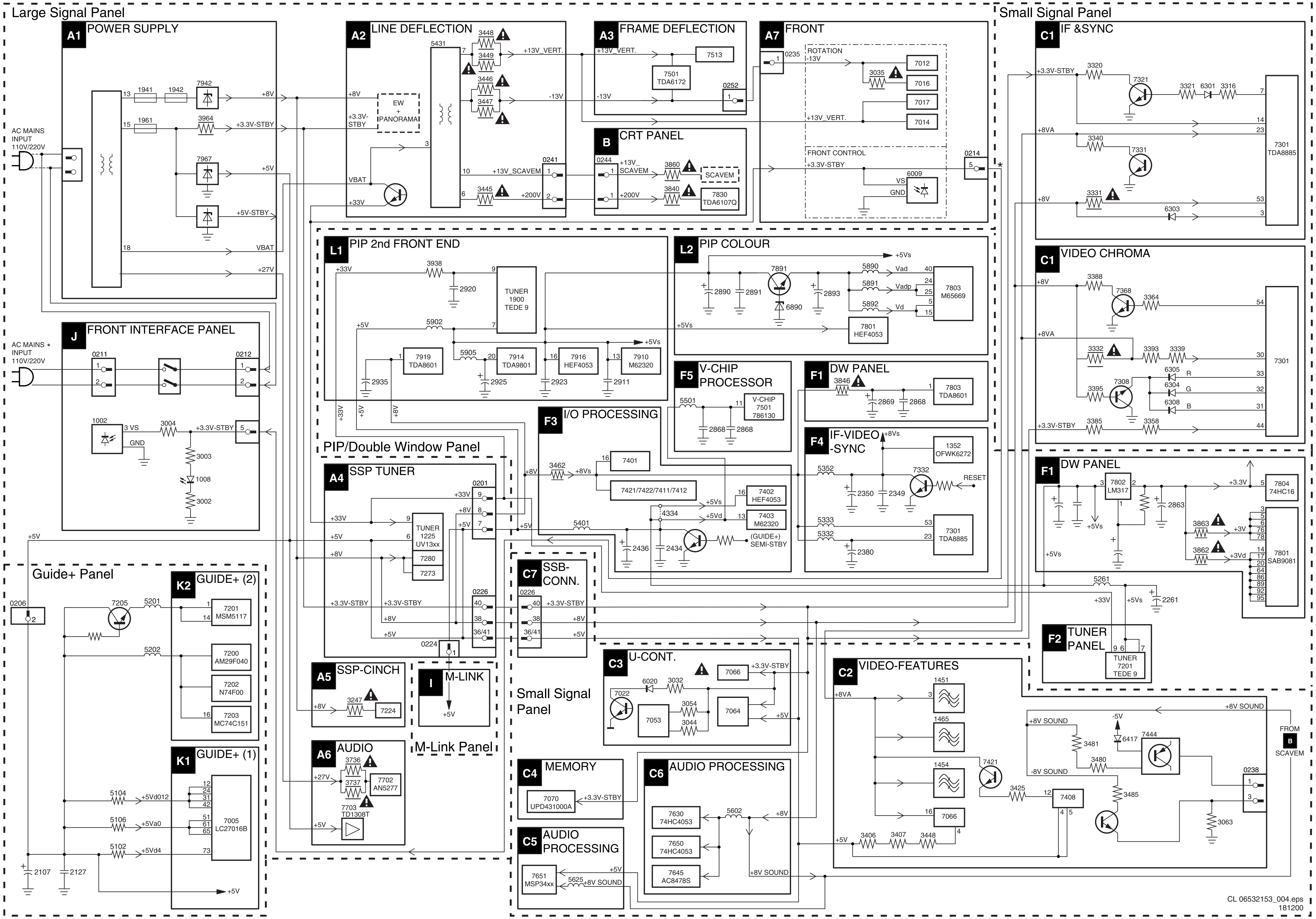
3420▲	4822 052 10478	4Ω7 5% 0.33W
3421▲	4822 052 10478	4Ω7 5% 0.33W
3425	4822 050 23303	33k 1% 0.6W
3426	4822 050 23303	33k 1% 0.6W
3427	4822 116 52304	82k 5% 0.5W
3428	4822 116 52234	100k 5% 0.5W
3429	4822 116 52234	100k 5% 0.5W
3430	4822 116 83961	6k8 5%
3431	4822 050 21003	10k 1% 0.6W
3432	4822 101 11191	10k 30% 0.1W
3433	4822 116 52234	100k 5% 0.5W
3434	4822 050 11002	1k 1% 0.4W
3435	4822 116 52234	100k 5% 0.5W
3436	4822 050 11002	1k 1% 0.4W
3437	4822 050 11002	1k 1% 0.4W
3438	4822 116 52175	100Ω 5% 0.5W
3439	4822 116 52175	100Ω 5% 0.5W
3440	4822 050 24708	4Ω7 1% 0.6W
3441	4822 050 24708	4Ω7 1% 0.6W
3442	4822 050 24708	4Ω7 1% 0.6W
3443	4822 050 24708	4Ω7 1% 0.6W
3450	4822 050 23303	33k 1% 0.6W
3451	4822 050 23303	33k 1% 0.6W
3452	4822 116 52291	56k 5% 0.5W
3453	4822 116 52234	100k 5% 0.5W
3454	4822 116 52234	100k 5% 0.5W
3455	4822 116 83961	6k8 5%
3456	4822 050 21003	10k 1% 0.6W
3457	4822 101 11191	10k 30% 0.1W
3458	4822 116 52234	100k 5% 0.5W
3459	4822 050 11002	1k 1% 0.4W
3460	4822 116 52234	100k 5% 0.5W
3461	4822 050 11002	1k 1% 0.4W
3462	4822 050 11002	1k 1% 0.4W
3463	4822 116 52175	100Ω 5% 0.5W
3464	4822 116 52175	100Ω 5% 0.5W
3465	4822 050 24708	4Ω7 1% 0.6W
3466	4822 050 24708	4Ω7 1% 0.6W
3467	4822 050 24708	4Ω7 1% 0.6W
3468	4822 050 24708	4Ω7 1% 0.6W

6430	5322 130 34563	BZX79-C2V7
6431	5322 130 34563	BZX79-C2V7
6432	5322 130 34563	BZX79-C2V7
6433	5322 130 34563	BZX79-C2V7
6455	5322 130 34563	BZX79-C2V7
6456	5322 130 34563	BZX79-C2V7
6457	5322 130 34563	BZX79-C2V7
6458	5322 130 34563	BZX79-C2V7

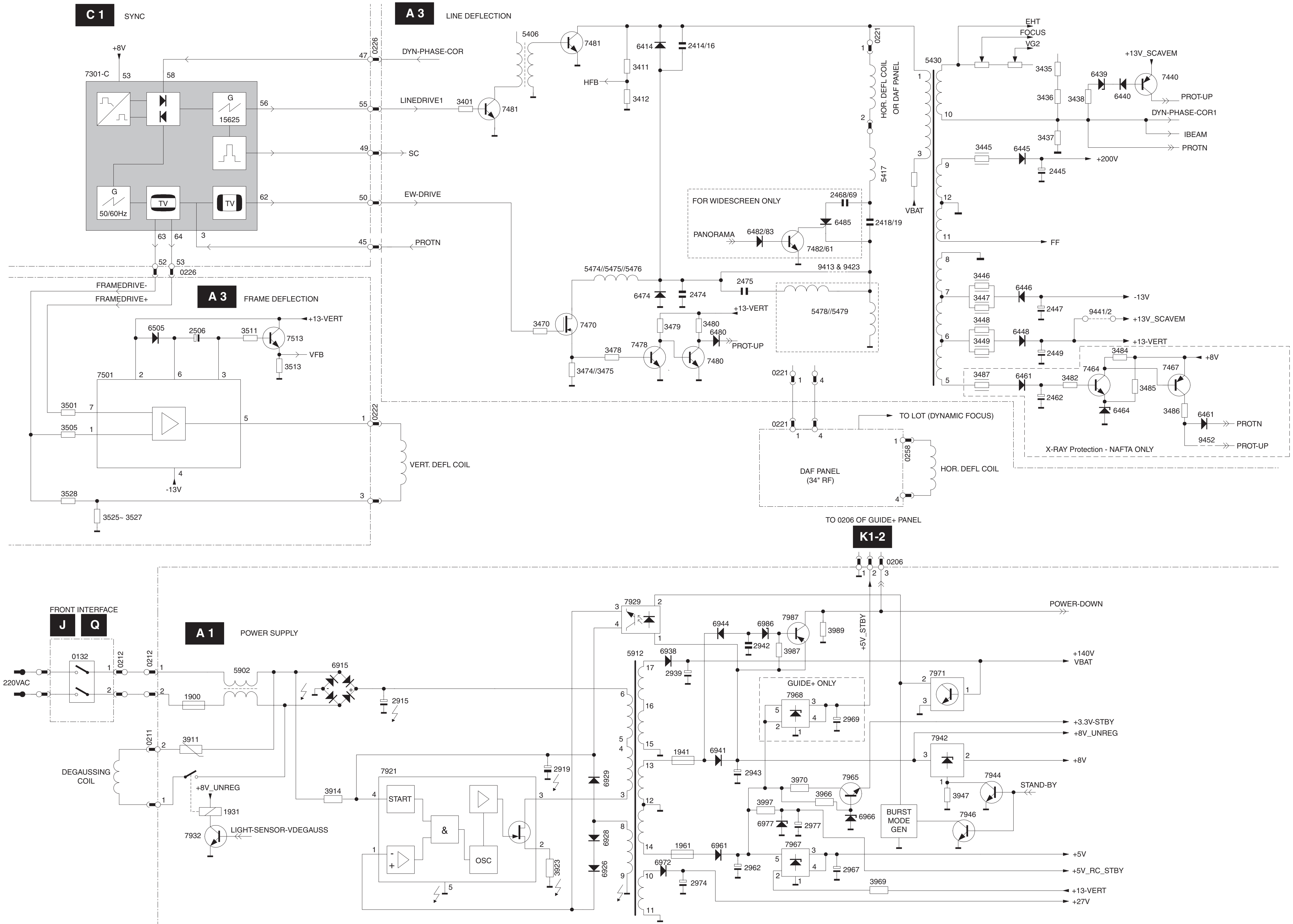
7420	9322 156 70682	MIU-212A
7421	4822 209 80587	LM324N
7422	4822 130 44568	BC557B
7423	4822 130 40959	BC547B
7424	4822 130 41109	BD135-16
7425	4822 130 41194	BD136-16
7426	4822 130 44568	BC557B
7427	4822 130 40959	BC547B
7428	4822 130 41109	BD135-16
7429	4822 130 41194	BD136-16

6. Block diagrams, wiring diagram and overviews

Supply voltage diagram



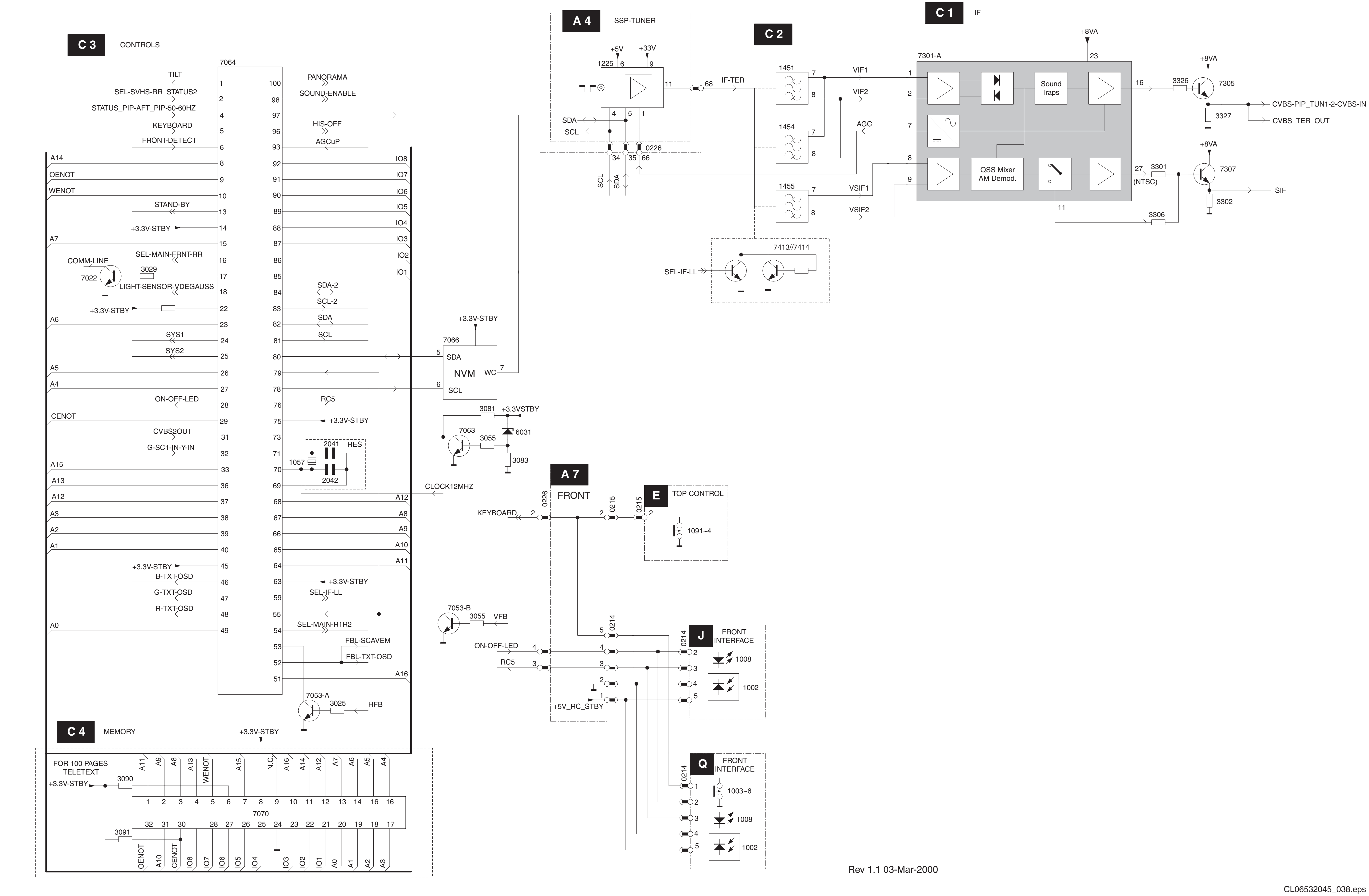
Blockdiagram (Deflection-power supply)



Rev 1.3 14-DEC-2000

CL06532045_037.eps
110101

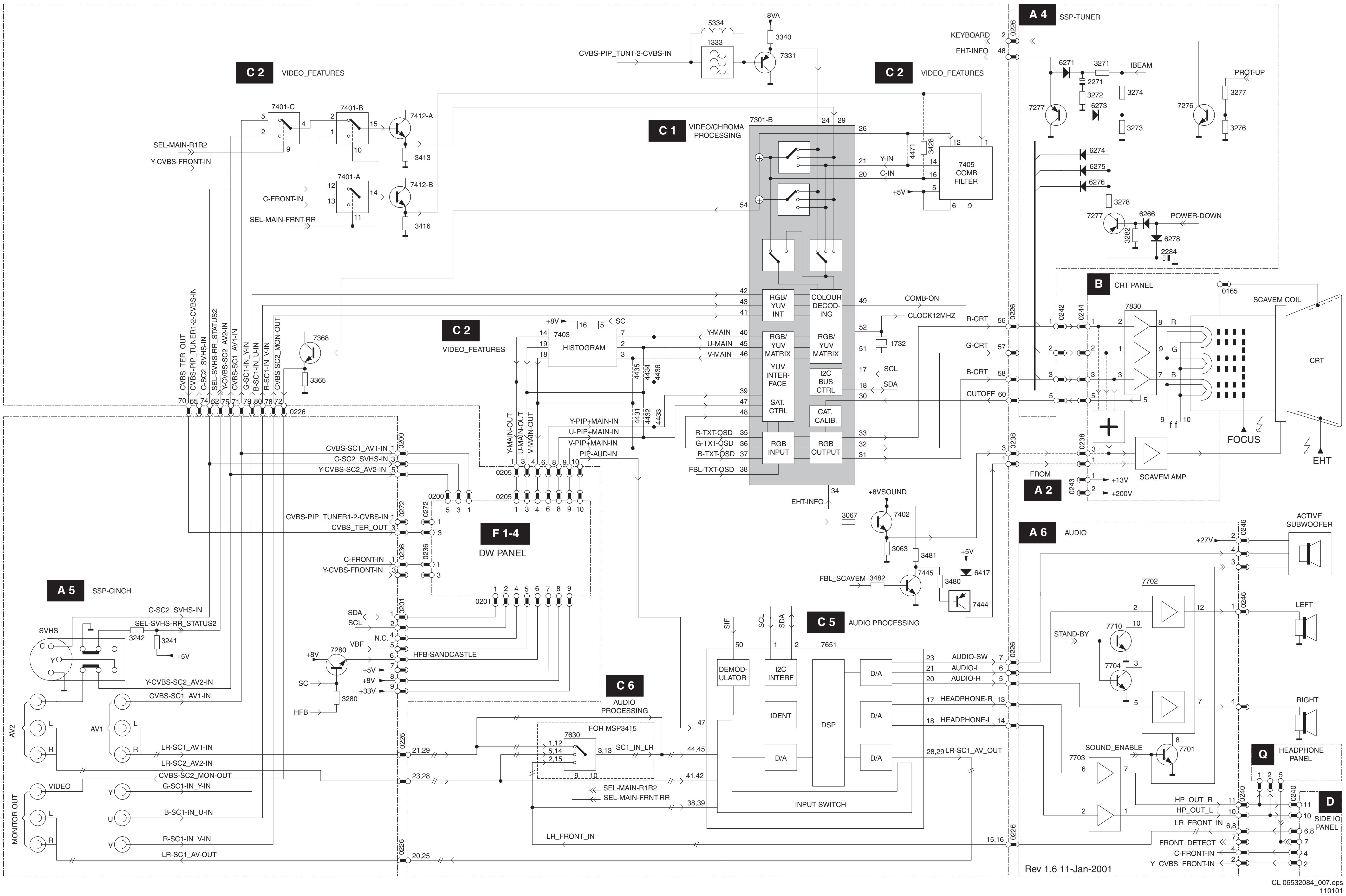
Blockdiagram (Tuner-IF-video)



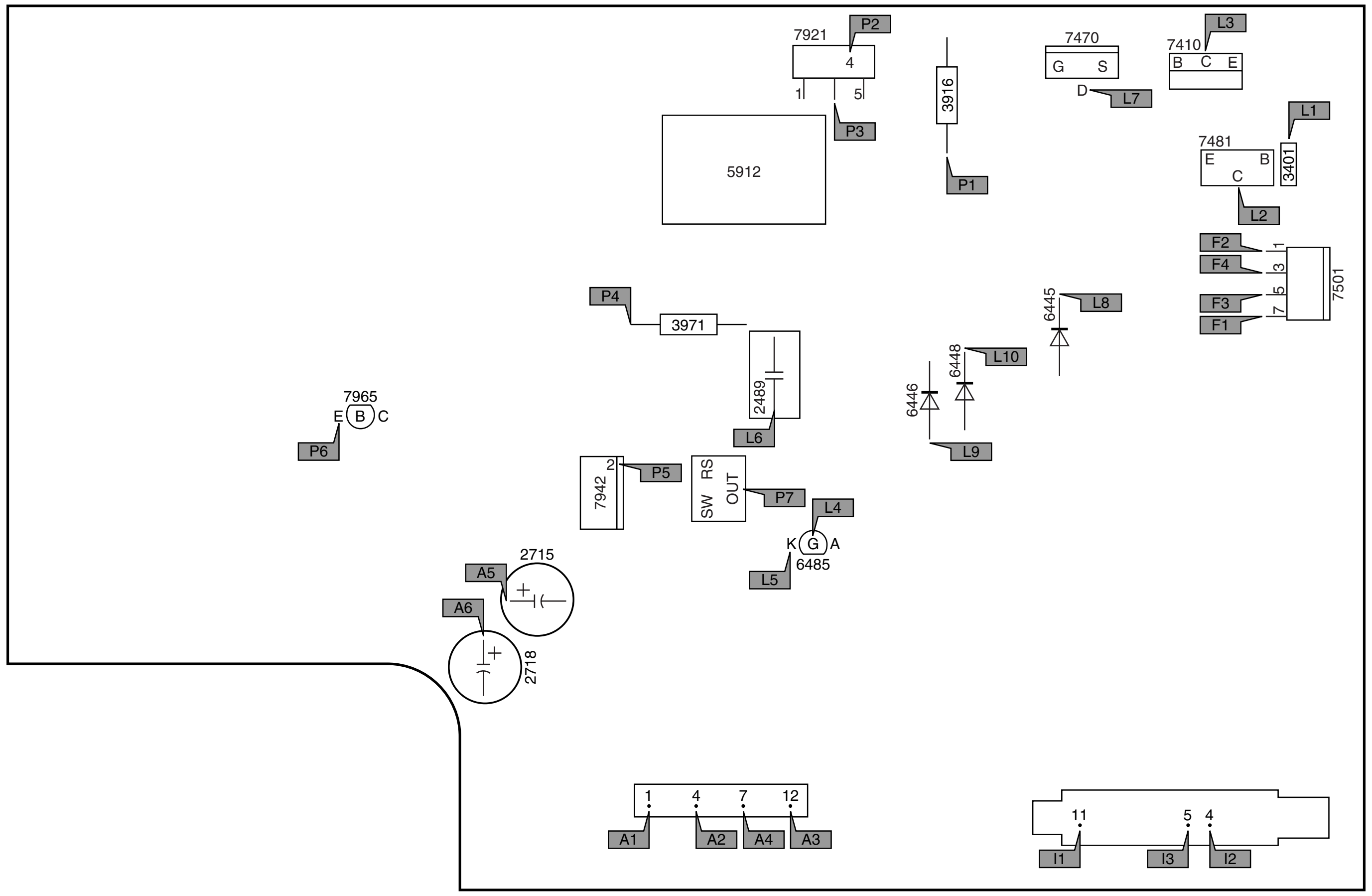
Rev 1.1 03-Mar-2000

CL06532045_038.eps
010500

Blockdiagram (RGB-sound AV)

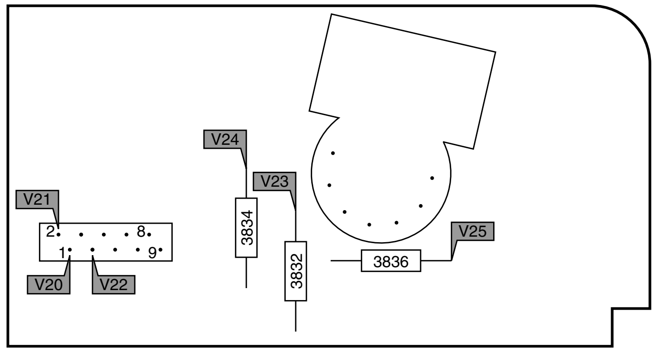


Testpointoverview LSP (component side)



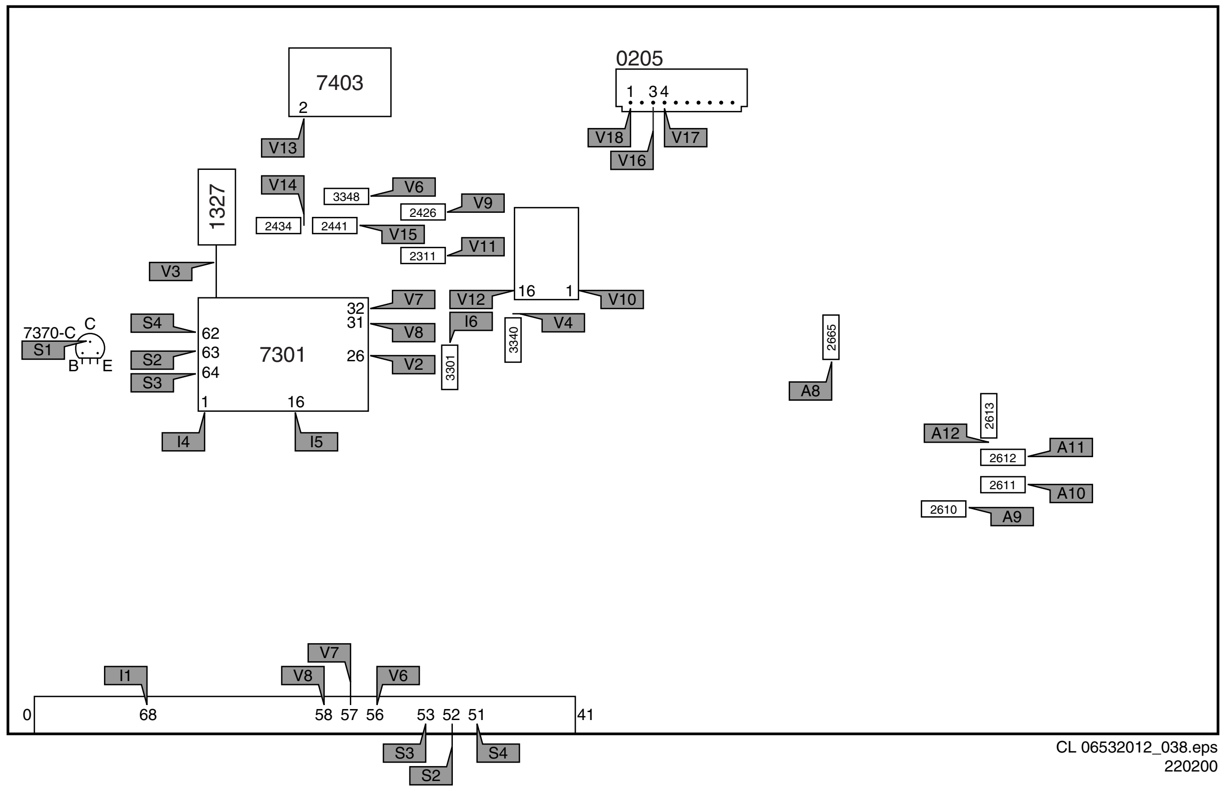
CL 06532012_039.eps
220200

Testpointoverview CRT (component side)



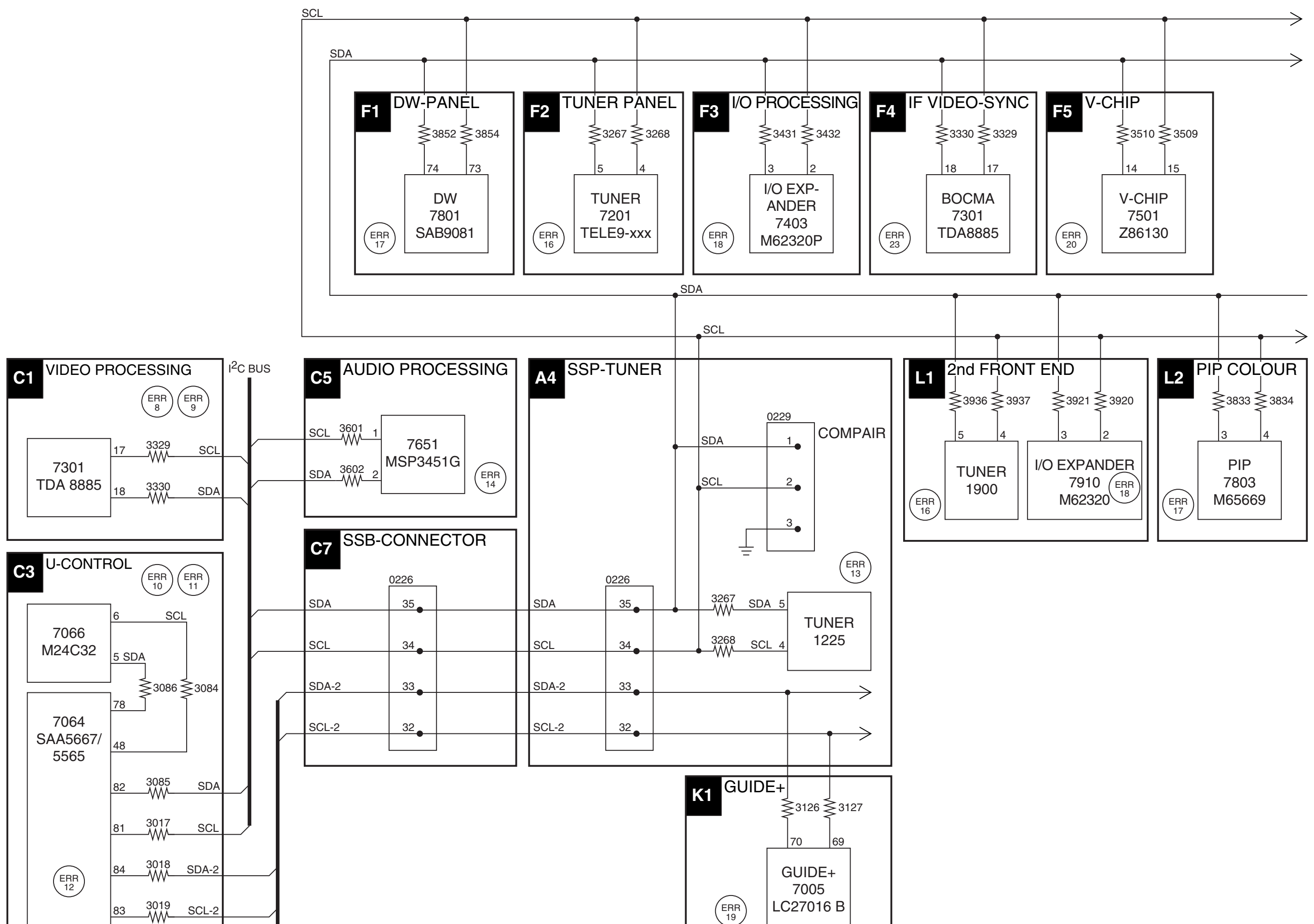
CL 06532012_037.eps
220200

Testpointoverview SSB (component side)



CL 06532012_038.eps
220200

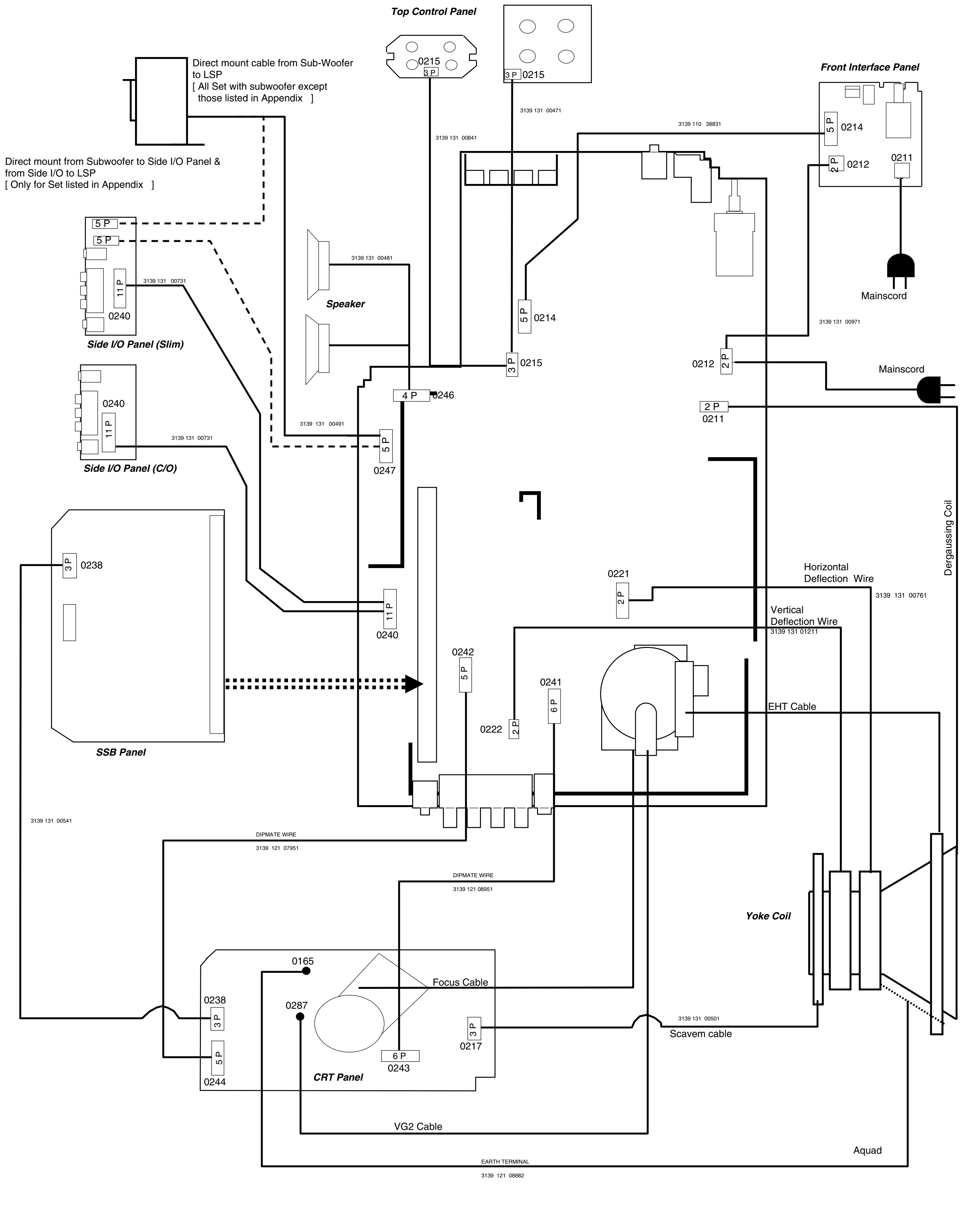
I^2C overview



CL 06532153_005.eps
110101

Wiringdiagram

A10 - Wire Diagram (Basic Configuration)

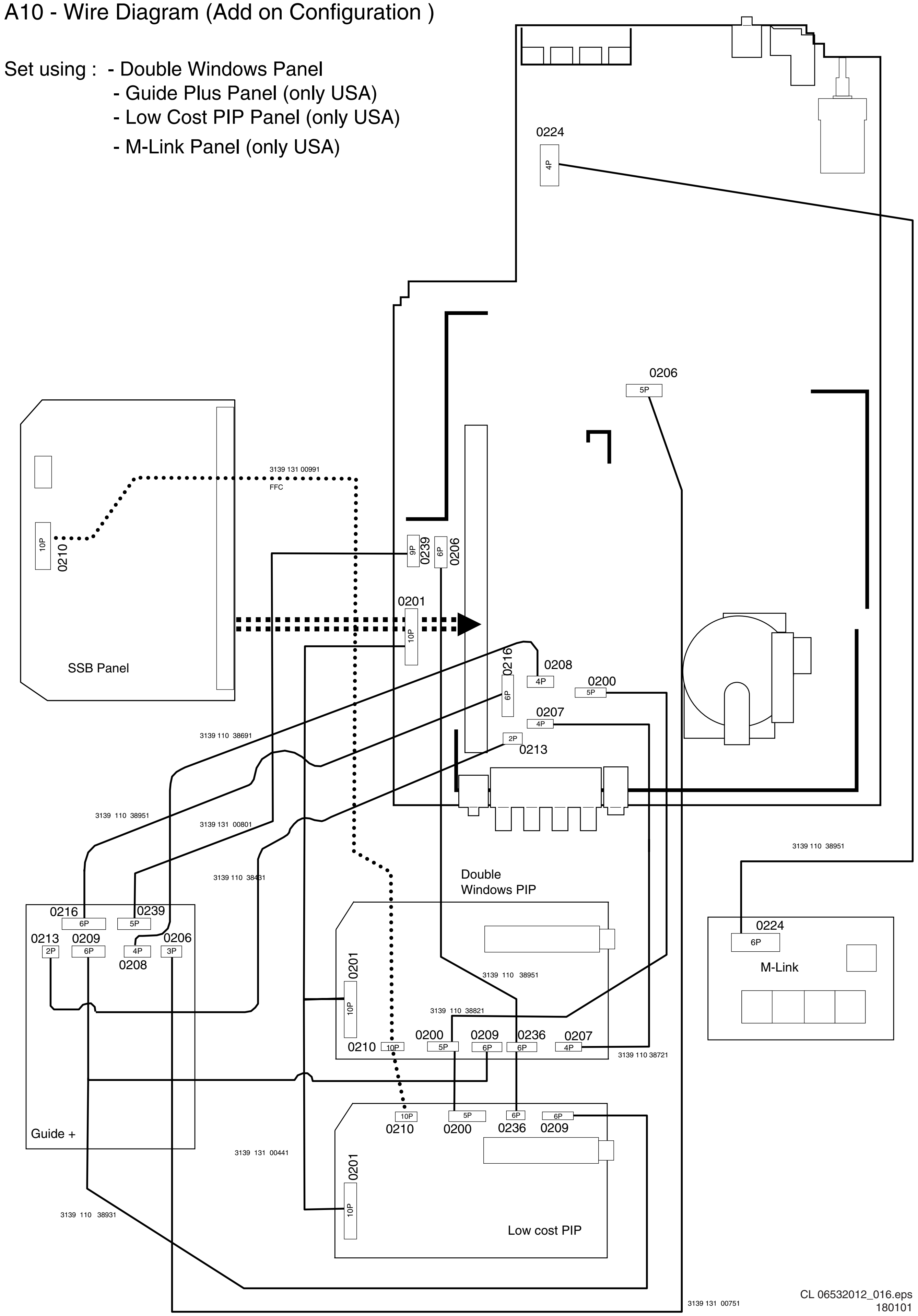


CL 06532012_017.eps
110101

Wiringdiagram

A10 - Wire Diagram (Add on Configuration)

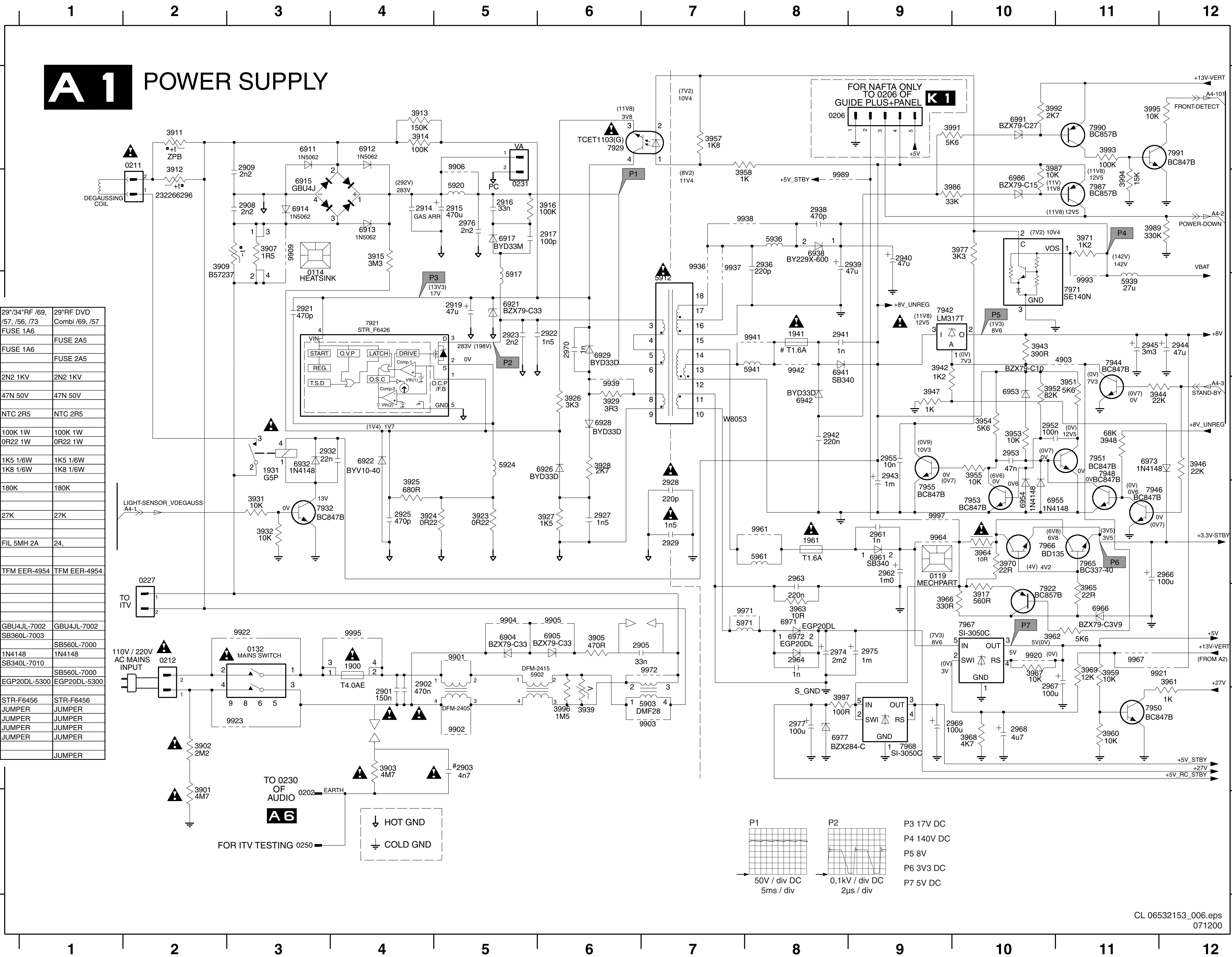
Set using : - Double Windows Panel
- Guide Plus Panel (only USA)
- Low Cost PIP Panel (only USA)
- M-Link Panel (only USA)



CL 06532012_016.eps
180101

7. Schematics and PWB's

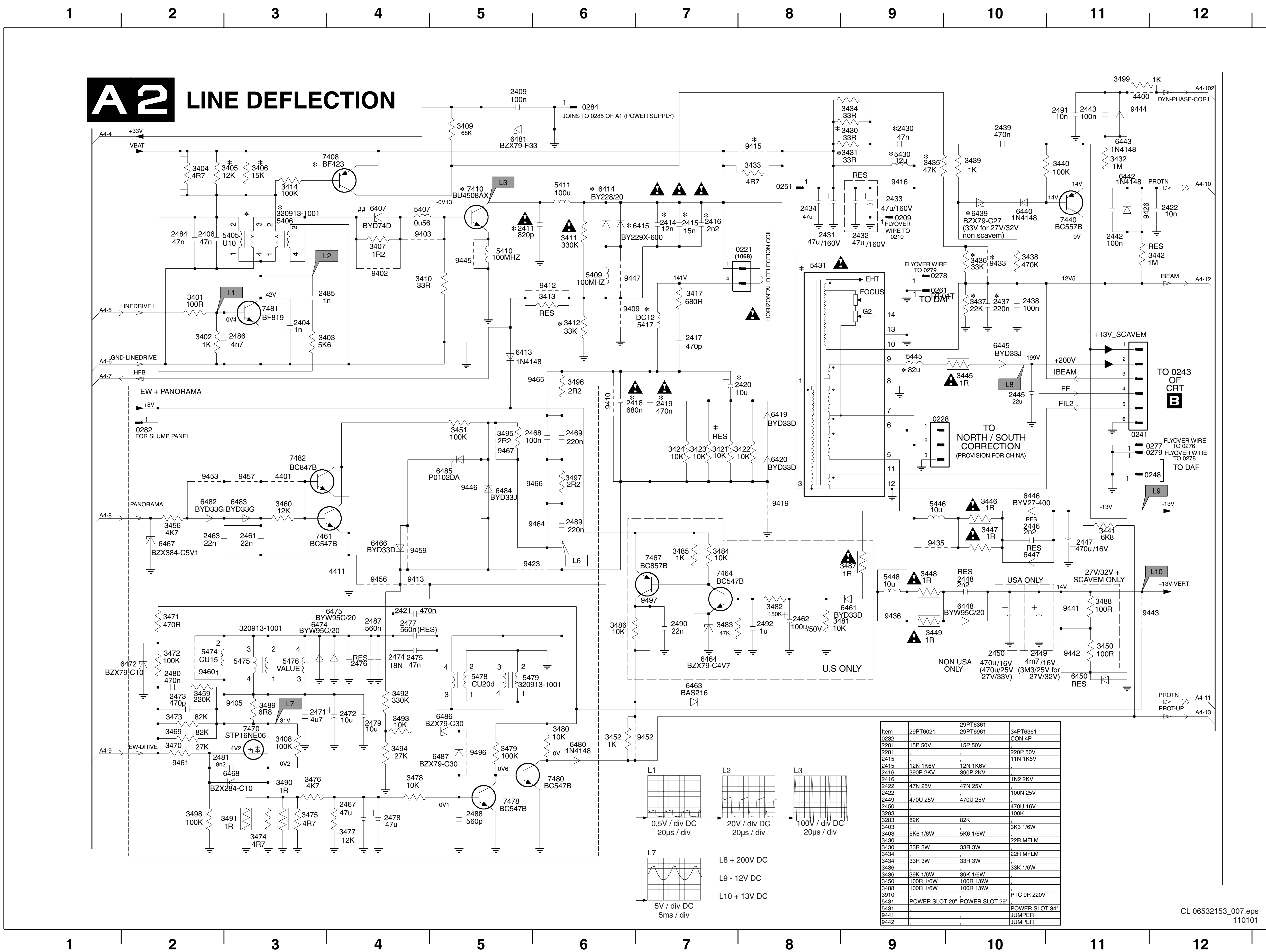
Power supply



Item	29"/34"RF /79	29"/34"RF /71, /61, /97	29"RF DVD Combi /79	29"/34"RF /69, /57, /56, /73	29"RF DVD Combi /69, /57
1941	FUSE 1A6	FUSE 1A6		FUSE 1A6	
1941			FUSE 2A5		FUSE 2A5
1961	FUSE 1A6	FUSE 1A6		FUSE 1A6	
1961			FUSE 2A5		FUSE 2A5
2909	220P 1KV				
2909		2N2 1KV	2N2 1KV	2N2 1KV	2N2 1KV
2955	8N2 50V		8N2 50V		
2955		47N 50V		47N 50V	47N 50V
3907	1R5 7W		1R5 7W		
3909		NTC 2R5		NTC 2R5	NTC 2R5
3913	150K 1W		150K 1W		
3913		100K 1W		100K 1W	100K 1W
3923		0R22 1W		0R22 1W	0R22 1W
3923	0R33 1W		0R33 1W		
3927		1K5 1/6W		1K5 1/6W	1K5 1/6W
3928		1K8 1/6W		1K8 1/6W	1K8 1/6W
3928	2K7 1/6W		2K7 1/6W		
3952		180K		180K	180K
3952	82K		82K		
3953	10K		10K		
3953		27K		27K	27K
5900		FIL 5MH 2A			
5902	FIL 15MH 1.2A		FIL 15MH 1.2A		
5902		FIL 5MH 2A		FIL 5MH 2A	24,
5903	FIL 30MH 1A5		FIL 30MH 1A5		
5903		FIL 10MH 2A			
5912		TFM EER-4954		TFM EER-4954	TFM EER-4954
5912	TFM EER-4245		TFM EER-4245		
6911	1N5062		1N5062		
6912	1N5062		1N5062		
6913	1N5062		1N5062		
6914	1N5062		1N5062		
6915		GBU4JL-7002		GBU4JL-7002	GBU4JL-7002
6941	SB360L-7003	SB360L-7003		SB360L-7003	
6941			SB560L-7000		SB560L-7000
6954		1N4148		1N4148	1N4148
6961	SB340L-7010	SB340L-7010		SB340L-7010	
6961			SB560L-7000		SB560L-7000
6972		EGP20DL-5300		EGP20DL-5300	EGP20DL-5300
7921	STR-F6454		STR-F6454		
7921		STR-F6456		STR-F6456	STR-F6456
9901	JUMPER		JUMPER	JUMPER	JUMPER
9902	JUMPER		JUMPER	JUMPER	JUMPER
9903				JUMPER	JUMPER
9972				JUMPER	JUMPER
9997			JUMPER		
9997					JUMPER

0114 C3
0119 E9
0132 F3
0202 G3
0206 A8
0211 A2
0212 F2
0227 E2
0231 B5
0250 H3
1900 F4
1931 D3
1941 C8
1961 E8
2901 G4
2902 F4
2903 G5
2905 F6
2908 B3
2909 A3
2914 B4
2915 B5
2916 B5
2917 B6
2919 C5
2921 C3
2922 C6
2923 C5
2925 E4
2927 E6
2928 E7
2929 E7
2932 D3
2936 B8
2938 B8
2939 B9
2940 B9
2941 C8
2942 D8
2943 D9
2944 C12
2945 C11
2952 D10
2953 D10
2955 D9
2961 E9
2962 E9
2963 E8
2964 F8
2966 E12
2967 F10
2968 G10
2969 G10
2970 C6
2974 F8
2975 F9
2976 B5
2977 G8
3901 H2
3902 G2
3903 G4
3905 F6
3907 B3
3909 B2
3911 A2
3912 B2
3913 A4
3914 A4
3915 B4
3916 B6
3917 F10
3923 E5
3924 E4
3925 D4
3926 D6
3927 E6
3928 D6
3929 D6
3931 E3
3932 E3
3939 G6
3942 C9
3943 C10
3944 D11
3946 D12
3947 D9
3948 D11
3951 D11
3952 D10
3953 D10
3954 D10
3955 D10
3957 A7
3958 B7
3959 F11
3960 G11
3961 F12
3962 F10
3963 F8
3964 E10
3965 F11
3966 F9
3967 F10
3968 G10
3969 F11
3970 E10
3971 B11
3977 B10
3986 B10
3987 A10
3989 B11
3991 A10
3992 A10
3993 A11
3994 B11
3995 A11
3996 G6
3997 G8
4903 C11
5902 F5
5903 G7
5912 C7
5917 B5
5920 B5
5924 D5
5936 B8
5939 C11
5941 C8
5961 E8
5971 F7
6904 F5
6905 F6
6911 A3
6912 A4
6913 B4
6914 B3
6915 B3
6917 B5
6921 C5
6922 D4
6926 D6
6928 D6
6929 C6
6932 D3
6938 B8
6941 C8
6942 D8
6953 D10
6954 E10
6955 E10
6961 E9
6966 F11
6971 F8
6972 F8
6973 D11
6977 G8
6986 B10
6991 A10
7921 C4
7922 F11
7929 A6
7932 E3
7942 C9
7944 C11
7946 E12
7948 D11
7950 G11
7951 D11
7953 E10
7955 E9
7965 E11
7966 E10
7967 F10
7968 G9
7971 C11
7987 B11
7990 A11
7991 A12
9901 F5
9902 G5
9903 G7
9904 F5
9905 F6
9906 B5
9909 B3
9920 F10
9921 F11
9922 F3
9923 G3
9936 B7
9937 B7
9938 B8
9939 D6
9941 C8
9942 C8
9961 E8
9964 E9
9967 F11
9971 F8
9972 F7
9989 B8
9993 C11
9995 F4
9997 E9

Line deflection

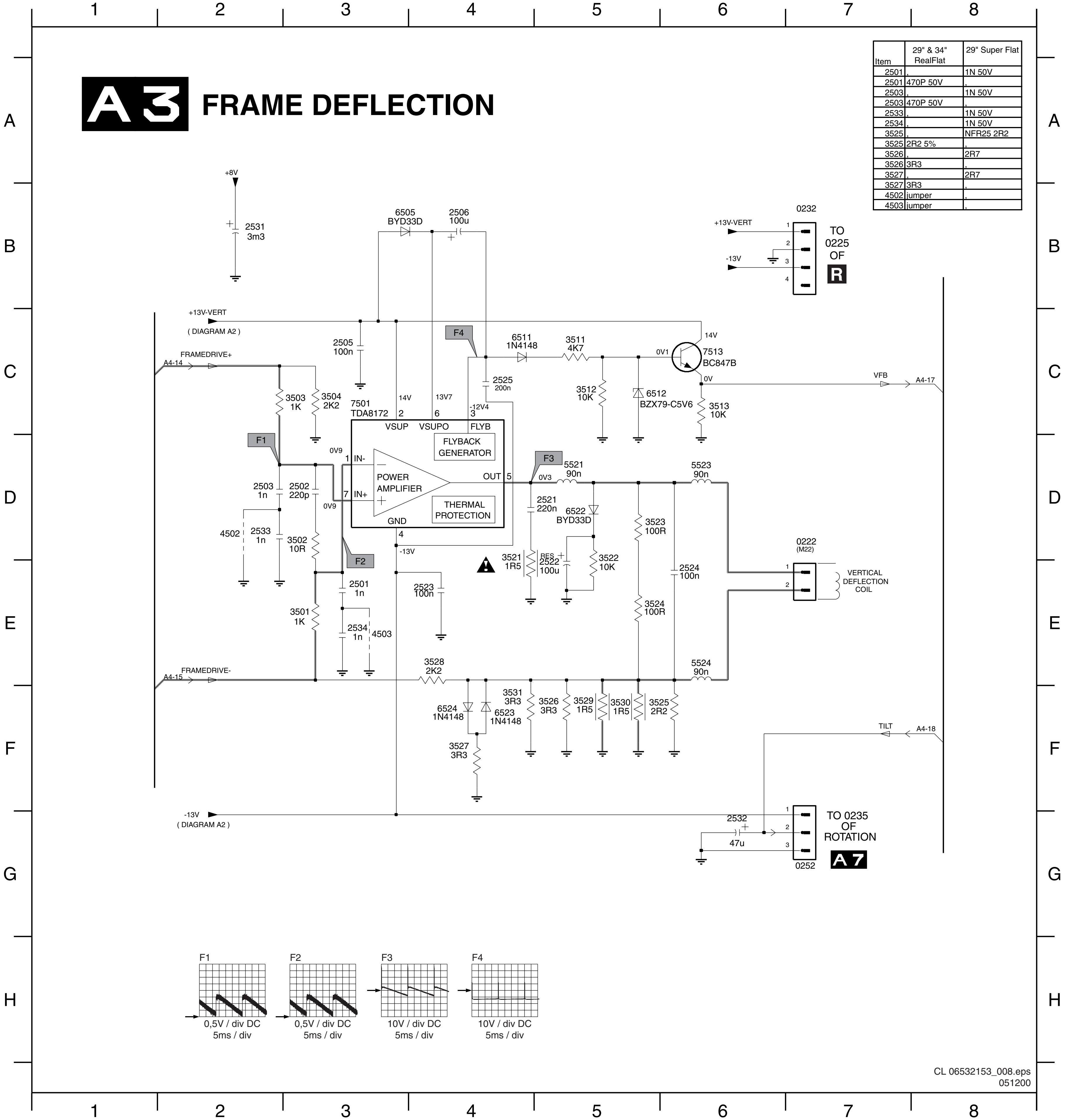


Item	29PT6021	29PT6361 29PT6961	34PT6361
0232	,	,	CON 4P
2281	15P 50V	15P 50V	,
2281	,	,	220P 50V
2415	,	,	11N 1K6V
2415	12N 1K6V	12N 1K6V	,
2416	390P 2KV	390P 2KV	,
2416	,	,	1N2 2KV
2422	47N 25V	47N 25V	,
2422	,	,	100N 25V
2449	470U 25V	470U 25V	,
2450	,	,	470U 16V
3283	,	,	100K
3283	82K	82K	,
3403	,	,	3K3 1/6W
3403	5K6 1/6W	5K6 1/6W	,
3430	,	,	22R MFLM
3430	33R 3W	33R 3W	,
3434	,	,	22R MFLM
3434	33R 3W	33R 3W	,
3436	,	,	33K 1/6W
3436	39K 1/6W	39K 1/6W	,
3450	100R 1/6W	100R 1/6W	,
3488	100R 1/6W	100R 1/6W	,
3910	,	,	PTC 9R 220V
5431	POWER SLOT 29"	POWER SLOT 29"	,
5431	,	,	POWER SLOT 34"
9441	,	,	JUMPER
9442	,	,	JUMPER

0209 B9
0221 B7
0228 D9
0241 D11
0248 D12
0251 B8
0261 C10
0277 D12
0278 C10
0279 D12
0282 D2
0284 A6
2404 C3
2406 B2
2409 A5
2411 B5
2414 B7
2415 B7
2416 B7
2417 C7
2418 D6
2419 D7
2420 D8
2421 F4
2422 B12
2430 A9
2431 B8
2432 B9
2433 B9
2434 B8
2437 C10
2438 C10
2439 A10
2442 B11
2443 A11
2445 D10
2446 E10
2447 E11
2448 E10
2449 F10
2450 F10
2461 E3
2462 F8
2463 E2
2467 H4
2468 D6
2469 D6
2471 G3
2472 G4
2473 G2
2474 F4
2475 F4
2476 F4
2477 F4
2478 H4
2479 G4
2480 F2
2481 G2
2484 B2
2485 C3
2486 C3
2487 F4
2488 H5
2489 E6
2490 F7
2491 A11
2492 F8
3401 C2
3402 C2
3403 C3
3404 A2
3405 A3
3406 A3
3407 B4
3408 G3
3409 A5
3410 C4
3411 B6
3412 C6
3413 C6
3414 B3
3417 C7
3421 D7
3422 D8
3423 D7
3424 D7
3430 A9
3431 A9
3432 A11
3433 A8
3434 A9
3435 A9
3436 B10
3437 C10
3438 B10
3439 A10
3440 A11
3441 E11
3442 B12
3445 D10
3446 E10
3447 E10
3448 E9
3449 F9
3450 F11
3451 D5
3452 G6
3456 E2
3459 G2
3460 E3
3469 G2
3470 G2
3471 F2
3472 F2
3473 G2
3474 H3
3475 H3
3476 G3
3477 H4
3478 G4
3479 G5
3480 G6
3481 F9
3482 F8
3483 F7
3484 E7
3485 E7
3486 F6
3487 E9
3488 F11
3489 G3
3490 G3
3491 H3
3492 G4
3493 G4
3494 G4
3495 D5
3496 D6
3497 D6
3498 H2
3499 A11
4400 A11
4401 E3
4411 E4
5405 B3
5406 B3
5407 B4
5409 C6
5410 B5
5411 B6
5417 C7
5430 A9
5431 B8
5445 C9
5446 E9
5448 E9
5474 F2
5475 F3
5476 F3
5478 F5
5479 F5
6407 B4
6413 C5
6414 B6
6415 B7
6419 D8
6420 D8
6439 B10
6440 B10
6442 B11
6443 A11
6445 C10
6446 E10
6447 E10
6448 F10
6450 F11
6461 F9
6463 F7
6464 F7
6466 E4
6467 E2
6468 G3
6472 F2
6474 F3
6475 F4
6480 G6
6481 A5
6482 E2
6483 E3
6484 E5
6485 D5
6486 G5
6487 G5
7408 A3
7410 B5
7440 B11
7461 E3
7464 E7
7467 E7
7470 G3
7478 H5
7480 G6
7481 C3
7482 D3
9402 C4
9403 B4
9405 G3
9409 C6
9410 D6
9412 C6
9413 F4
9415 A8
9416 B9
9419 E8
9423 E5
9426 B11
9433 B10
9435 E9
9436 F9
9441 F11
9442 F11
9443 F12
9444 A11
9445 B5
9446 E5
9447 C6
9452 G7
9453 E2
9456 F4
9457 E3
9459 E4
9460 F2
9461 G2
9464 E6
9465 D6
9466 E6
9467 D5
9496 G5
9497 F7

Frame deflection

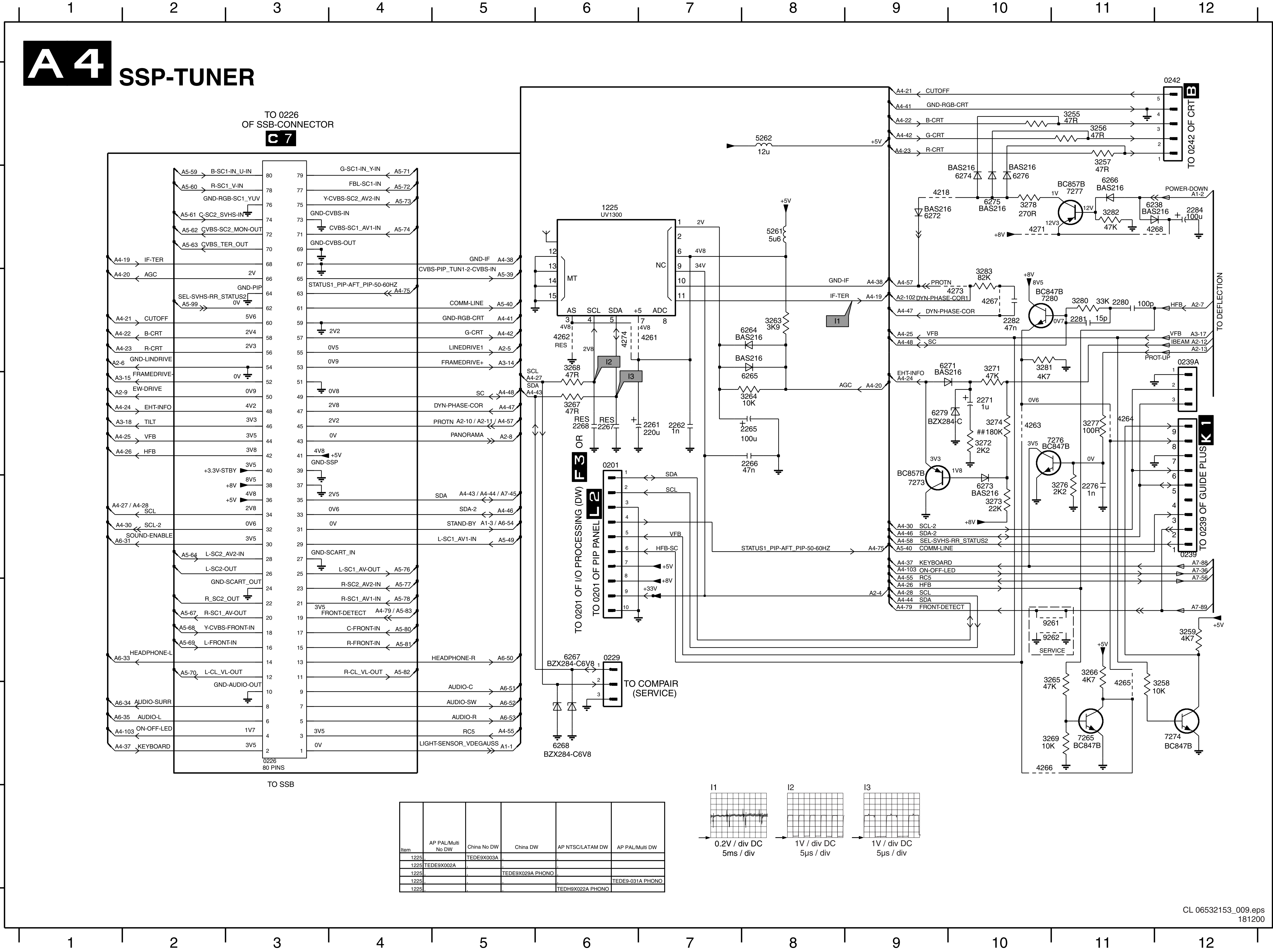
A3 FRAME DEFLECTION



Item	29" & 34" RealFlat	29" Super Flat
2501	,	1N 50V
2501	470P 50V	,
2503	,	1N 50V
2503	470P 50V	,
2533	,	1N 50V
2534	,	1N 50V
3525	,	NFR25 2R2
3525	2R2 5%	,
3526	,	2R7
3526	3R3	,
3527	,	2R7
3527	3R3	,
4502	jumper	,
4503	jumper	,

0222 D7
0232 B7
0252 G7
2501 E4
2502 D3
2503 D3
2505 C4
2506 B4
2521 D5
2522 D5
2523 E4
2524 E6
2525 C5
2531 B2
2532 F7
2533 D3
2534 E4
3501 E3
3502 D3
3503 C3
3504 C3
3511 C5
3512 C6
3513 C7
3521 D5
3522 D6
3523 D6
3524 E6
3525 F6
3526 F5
3527 F5
3528 E5
3529 F5
3530 F6
4502 D3
4503 E4
5521 D5
5523 D6
5524 E6
6505 B4
6511 C5
6512 C6
6522 D5
7501 C4
7513 C6

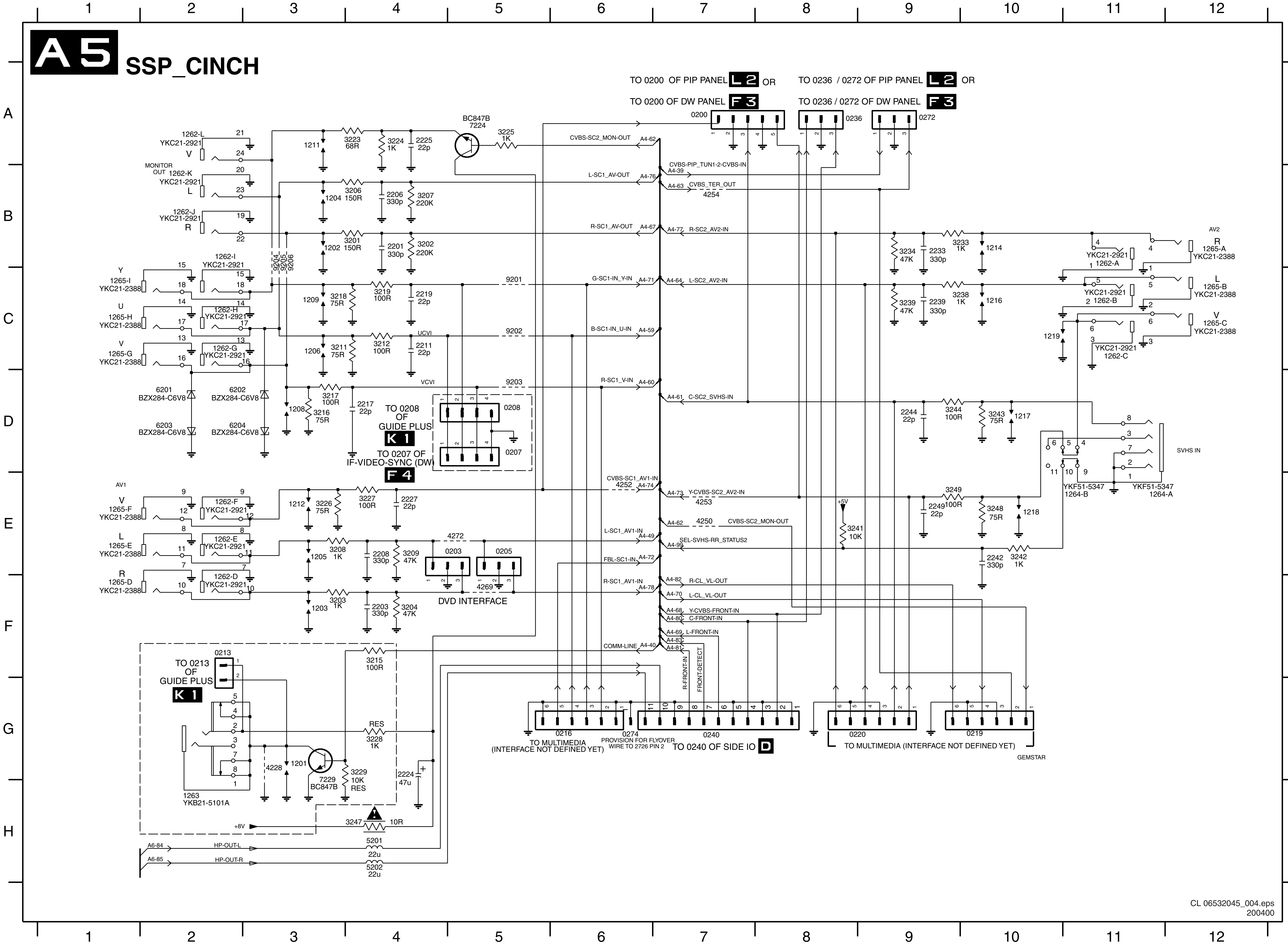
SSP-Tuner



Item	AP PAL/Multi No DW	China No DW	China DW	AP NTSC/LATAM DW	AP PAL/Multi DW
1225	,	TEDE9X003A	,	,	
1225	TEDE9X002A	,	,	,	
1225	,	,	TEDE9X029A PHONO	,	
1225	,	,	,	,	TEDE9-031A PHONO
1225	,	,	,	TEDH9X022A PHONO	

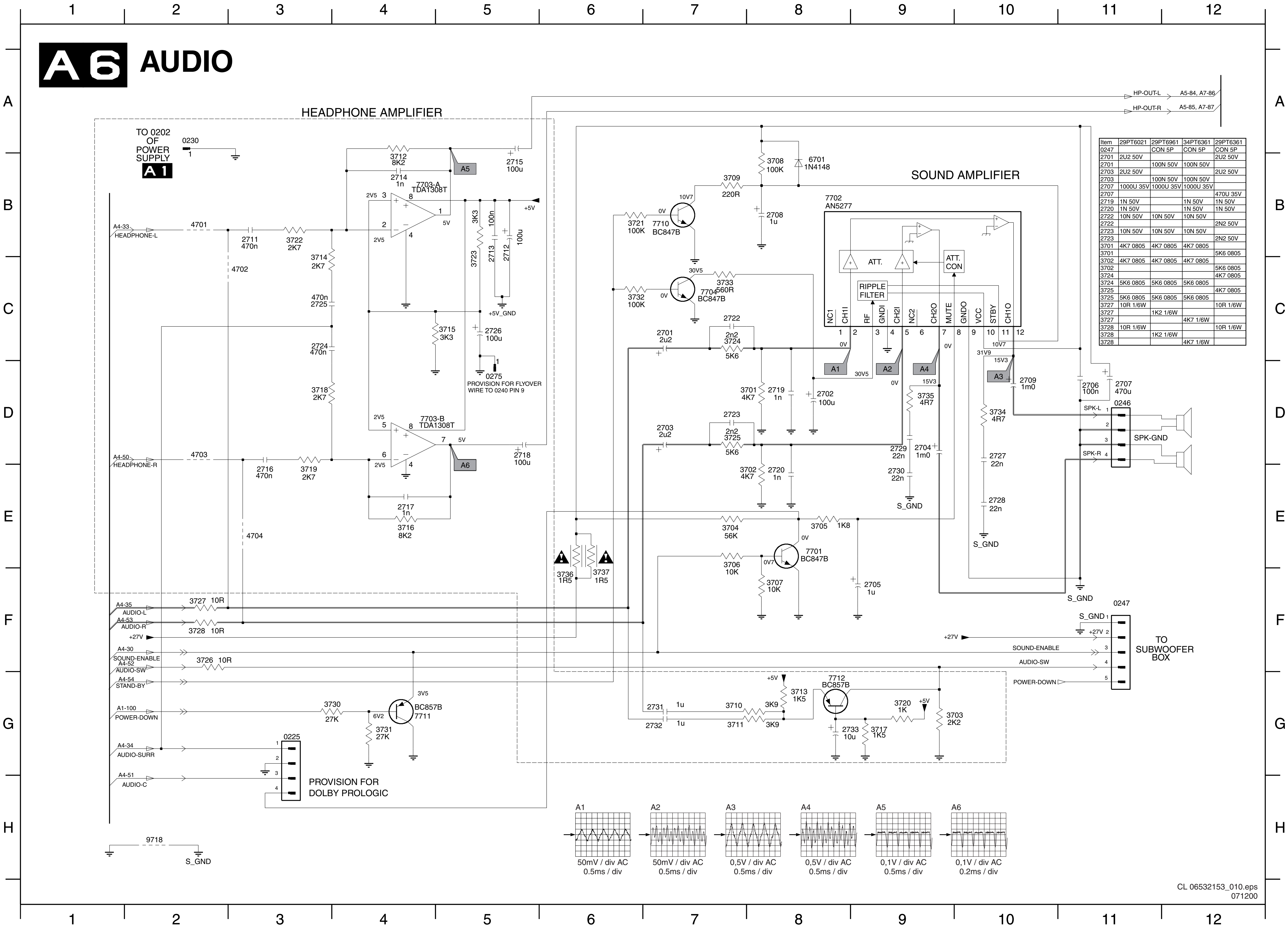
0201 D6
0226 G3
0229 F6
0239 E12
0239A C12
0242 A12
1225 B6
2261 D7
2262 D7
2265 D8
2266 D8
2267 D6
2268 D6
2271 D10
2276 E11
2280 C11
2281 C11
2282 C10
2284 B12
3255 A11
3256 A11
3257 A11
3258 F12
3259 F12
3263 C8
3264 D8
3265 F11
3266 F11
3267 D6
3268 C6
3269 G10
3271 C10
3272 D10
3273 E10
3274 D10
3276 E11
3277 D11
3278 B10
3280 C11
3281 C10
3282 B11
3283 C10
4218 B9
4261 C7
4262 C6
4263 D10
4264 D11
4265 F11
4266 G10
4267 C10
4268 B12
4271 B10
4273 C10
4274 C6
5261 B8
5262 A8
6238 B11
6264 C8
6265 D8
6266 B11
6267 F6
6268 G6
6271 C9
6272 B9
6273 E10
6274 B10
6275 B10
6276 B10
6279 D9
7265 G11
7273 E9
7274 G12
7276 D11
7277 B11
7280 C11
9261 F10
9262 F10

SSP-Cinch



Ref	Pos
0200	A7
0203	E5
0205	E5
0207	D5
0208	D5
0213	F2
0216	G6
0219	G10
0220	G9
0236	A9
0240	G7
0272	A9
0274	G6
1201	G3
1202	B3
1203	F3
1204	B3
1205	E3
1206	C3
1208	D3
1209	C3
1211	A3
1212	E3
1214	B10
1216	C10
1217	D10
1218	E10
1219	C10
1262-A	B11
1262-B	C11
1262-C	C11
1262-D	F2
1262-E	E2
1262-F	E2
1262-G	C2
1262-H	C2
1262-I	B2
1262-J	B2
1262-K	B2
1262-L	A2
1263	H2
1264-A	E11
1264-B	E11
1265-A	B12
1265-B	C12
1265-C	C12
1265-D	F1
1265-E	E1
1265-F	E1
1265-G	C1
1265-H	C1
1265-I	C1
2201	B4
2203	F4
2206	B4
2208	E4
2211	C4
2217	D4
2219	C4
2224	G4
2225	A4
2227	E4
2233	B9
2239	C9
2242	E10
2244	D9
2249	E9
3201	B4
3202	B4
3203	F3
3204	F4
3206	B4
3207	B4
3208	E3
3209	E4
3211	C3
3212	C4
3215	F4
3216	D3
3217	D3
3218	C3
3219	C4
3223	A4
3224	A4
3225	A5
3226	E3
3227	E4
3228	G4
3229	G4
3233	B10
3234	B9
3238	C10
3239	C9
3241	E8
3242	E10
3243	D10
3244	D9
3247	H4
3248	E10
3249	E9
4228	G3
4250	E7
4252	E6
4253	E7
4254	B7
4269	F5
4272	E5
5201	H4
5202	H4
6201	D2
6202	D2
6203	D2
6204	D2
7224	A5
7229	H3
9201	C5
9202	C5
9203	D5
9204	B3
9205	B3
9206	B3

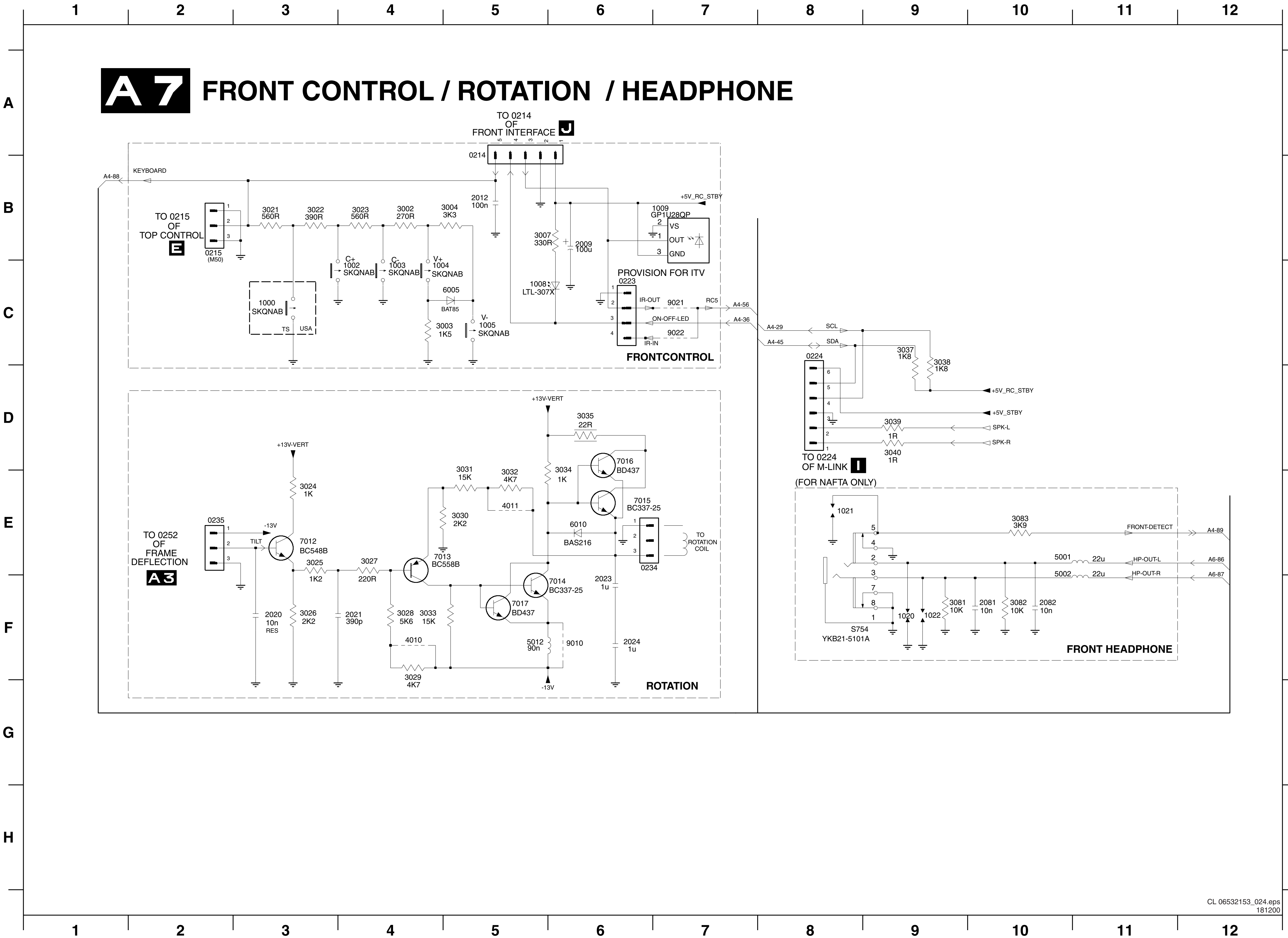
Audio



Item	29PT6021	29PT6961	34PT6361	29PT6361
0247		CON 5P	CON 5P	CON 5P
2701	2U2 50V			2U2 50V
2701		100N 50V	100N 50V	
2703	2U2 50V			2U2 50V
2703		100N 50V	100N 50V	
2707	1000U 35V	1000U 35V	1000U 35V	
2707				470U 35V
2719	1N 50V		1N 50V	1N 50V
2720	1N 50V		1N 50V	1N 50V
2722	10N 50V	10N 50V	10N 50V	
2722				2N2 50V
2723	10N 50V	10N 50V	10N 50V	
2723				2N2 50V
3701	4K7 0805	4K7 0805	4K7 0805	
3701				5K6 0805
3702	4K7 0805	4K7 0805	4K7 0805	
3702				5K6 0805
3724				4K7 0805
3724	5K6 0805	5K6 0805	5K6 0805	
3725				4K7 0805
3725	5K6 0805	5K6 0805	5K6 0805	
3727	10R 1/6W			10R 1/6W
3727		1K2 1/6W		
3727			4K7 1/6W	
3728	10R 1/6W			10R 1/6W
3728		1K2 1/6W		
3728			4K7 1/6W	

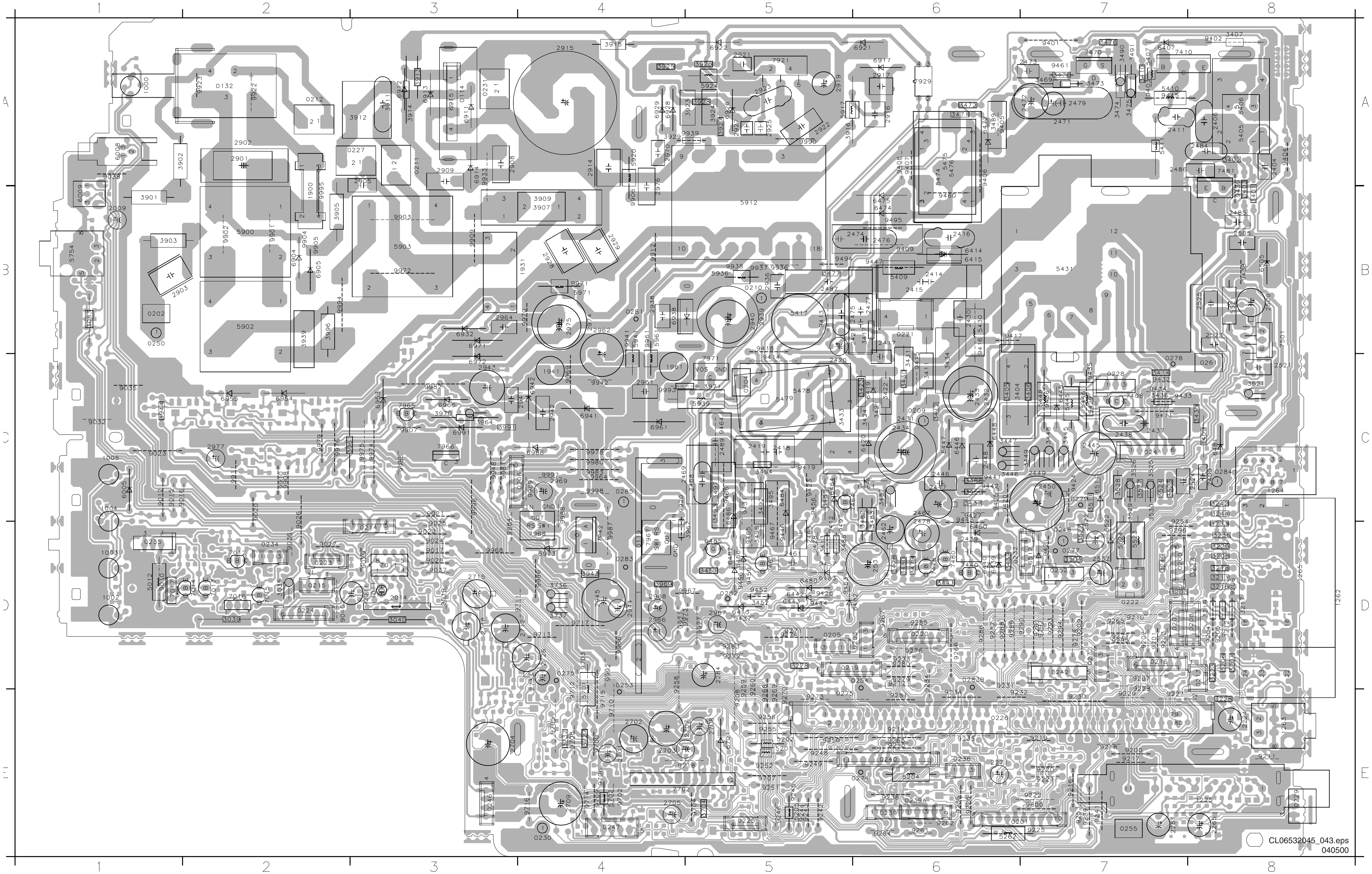
0225 G3
0230 A2
0246 D11
0247 F11
0275 D5
2701 C7
2702 D8
2703 D7
2704 D9
2705 F9
2706 D11
2707 D11
2708 B8
2709 D10
2711 B3
2712 B5
2713 B5
2714 B4
2715 B5
2716 E3
2717 E4
2718 D5
2719 D8
2720 E8
2722 C7
2723 D7
2724 C3
2725 C3
2726 C5
2727 D10
2728 E10
2729 D9
2730 E9
2731 G7
2732 G7
2733 G8
3701 D8
3702 E8
3703 G10
3704 E7
3705 E8
3706 E7
3707 F8
3708 B8
3709 B7
3710 G7
3711 G7
3712 B4
3713 G8
3714 C3
3715 C5
3716 E4
3717 G9
3718 D3
3719 E3
3720 G9
3721 B6
3722 B3
3723 C5
3724 C7
3725 D7
3726 F2
3727 F2
3728 F2
3730 G4
3731 G4
3732 C6
3733 C7
3734 D10
3735 D9
3736 F6
3737 F6
4701 B2
4702 C3
4703 D2
4704 E3
6701 B8
7701 E8
7702 B8
7703-A B4
7703-B D4
7704 C7
7710 B7
7711 G4
7712 G8
9718 H2

Front control / Rotation / Headphone



0214 B5
0215 B2
0223 C6
0224 C8
0234 E6
0235 E2
1000 C3
1002 C4
1003 C4
1004 C4
1005 C5
1008 C5
1009 B7
1020 F9
1021 E8
1022 F9
2009 B6
2012 B5
2020 F3
2021 F4
2023 F6
2024 F6
2081 F10
2082 F10
3002 B4
3003 C5
3004 B5
3007 B5
3021 B3
3022 B3
3023 B4
3024 E3
3025 E3
3026 F3
3027 E4
3028 F4
3029 F4
3030 E5
3031 D5
3032 E5
3033 F4
3034 D6
3035 D6
3037 C9
3038 C9
3039 D9
3040 D9
3081 F9
3082 F10
3083 E10
4010 F4
4011 E5
5001 E10
5002 F10
5012 F5
6005 C5
6010 E6
7012 E3
7013 E4
7014 F6
7015 E6
7016 D6
7017 F5
9010 F6
9021 C7
9022 C7
S754 F9

Layout LSP (component side)



CL06532045_043.eps
040500

Mapping LSP (component side)

0114 A3
0119 D4
0132 A2
0200 D7
0201 E6
0202 B1
0203 D6
0204 C5
0205 D5
0206 C4
0207 D7
0208 D8
0209 C6
0210 B5
0211 A3
0212 A2
0213 D8
0214 D3
0215 D2
0216 D7
0219 D5
0220 D6
0221 B6
0222 D7
0223 D2
0224 D2
0225 E5
0226 E6
0227 A3
0228 C7
0229 E8
0230 E4
0231 A3
0232 D6
0234 D2
0235 D1
0236 E6
0239 E6
0239A E6
0240 E6
0241 C7
0242 D7
0246 E3
0247 E4
0248 D7
0250 B1
0252 D7
0253 D4
0254 D6
0255 E7
0261 C8
0272 D7
0274 E6
0275 D4
0277 D7
0278 C7
0279 C7
0281 B4
0282 D5
0283 D4
0283B D6
0284 C8
0285 C4
1000 A1
1002 D1
1003 D1
1004 C1
1005 C1
1011 D3
1225 E8
1262 D8
1263 E8
1264 C8
1265 D8
1900 B2
1931 B4
1941 C4
1961 C4
2009 B1
2011 D3
2014 D3
2224 E8
2261 E7
2265 E8
2271 E6
2284 D5
2404 A8
2406 A8
2409 C8
2411 A7
2414 B6
2415 B6
2416 B6
2417 B6
2418 C5
2419 C5
2420 C5
2421 B6
2430 B6
2431 C6
2432 C6
2433 C6
2434 C6
2437 C7
2438 C7
2439 D6
2445 C7
2446 C6
2447 C6
2448 C6
2449 C7
2450 C7
2461 D5
2462 D6
2463 D5
2467 C6
2468 C5
2469 C4
2471 A7
2472 A7
2473 A7
2474 B6
2475 B5
2476 B6
2477 B6
2478 D6
2479 A7
2484 A8
2485 B8
2486 A7
2487 B5
2489 C5
2505 B8
2506 B8
2521 C8
2522 D7
2523 B8
2524 C8
2525 B8
2531 D6
2532 D7
2701 E4
2702 E4
2703 E4
2704 E3
2705 E4
2707 E5
2708 E5
2709 E4
2712 D4
2715 D3
2718 D3
2726 D4
2733 D4
2901 A2
2902 A2
2903 B1
2905 A3
2908 A3
2909 A3
2914 A4
2915 A4
2916 A6
2917 A6
2919 A5
2921 A5
2922 A5
2923 A5
2925 A5
2927 A5
2928 B4
2929 B4
2936 B5
2938 B4
2939 B5
2940 B5
2941 C4
2942 C4
2943 C3
2944 D4
2945 D4
2961 C4
2962 B4
2964 B3
2966 D4
2967 D5
2968 D4
2969 C4
2970 A4
2974 B4
2975 B4
2976 B4
2977 C2
3035 D2
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3434 C6
3435 C8
3436 C7
3437 C6
3439 D6
3441 D6
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3447 C6
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9295 D7
9296 D7
9401 A7
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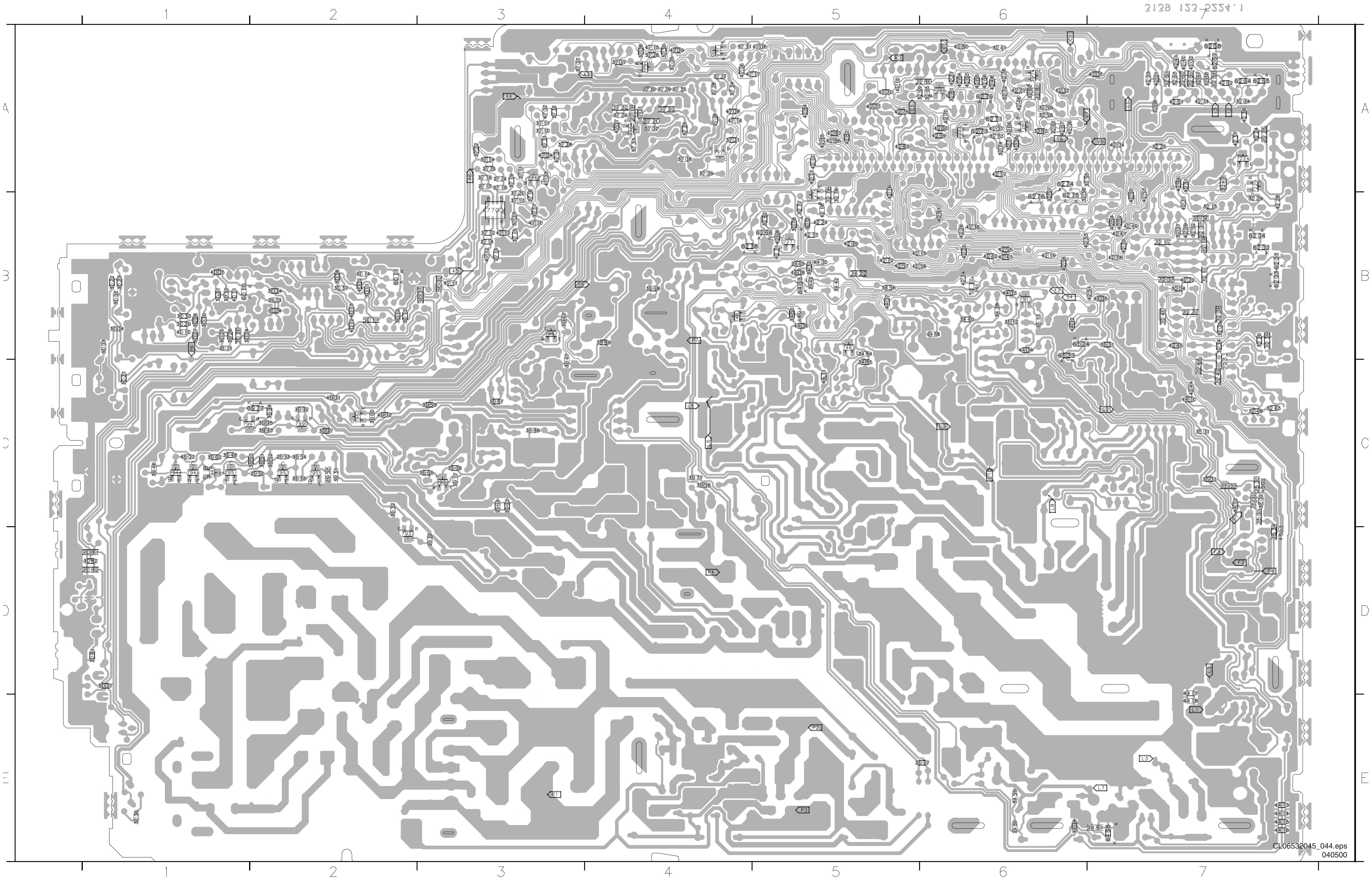
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Mapping LSP (copper side)

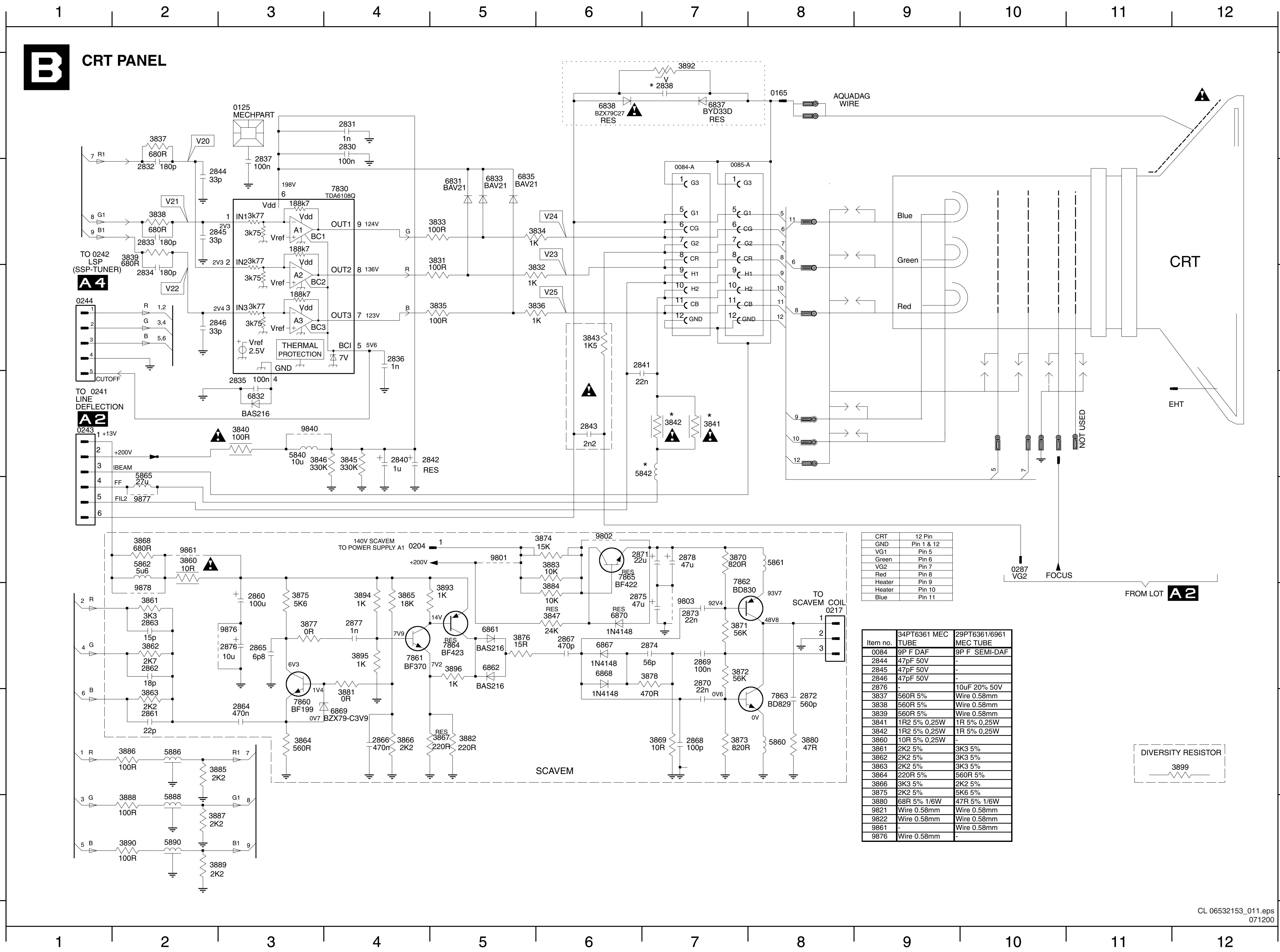
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2225 A7
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2244 C7
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2267 A7
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2281 A6
2282 A6
2422 B5
2442 B5
2443 B5
2480 E6
2481 E7
2488 B6
2501 C7
2502 C7
2503 C7
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2534 D7
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2932 D3
2952 C2
2953 C2
2955 C2
2963 C3
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3003 B1
3004 B1
3007 D1
3011 B2
3012 B2
3013 B2
3014 B2
3021 C1
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3032 B1
3033 B1
3034 B2
3036 E1
3037 B2
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4417 D7
4418 E7
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4701 A3
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4901 C2
4902 C2
4903 C1
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5002 B3
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7274 A6
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7277 B5
7280 A6
7467 B5
7482 B4
7513 B6
7701 A4
7703 B3
7704 A4
7710 A4
7711 A4
7712 A3
7922 C3
7932 D2
7944 C1
7946 C1
7948 C1
7950 C2
7951 C1
7953 C2
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7987 B3
7990 C2
7991 C1

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Layout LSP (copper side)



CRT panel



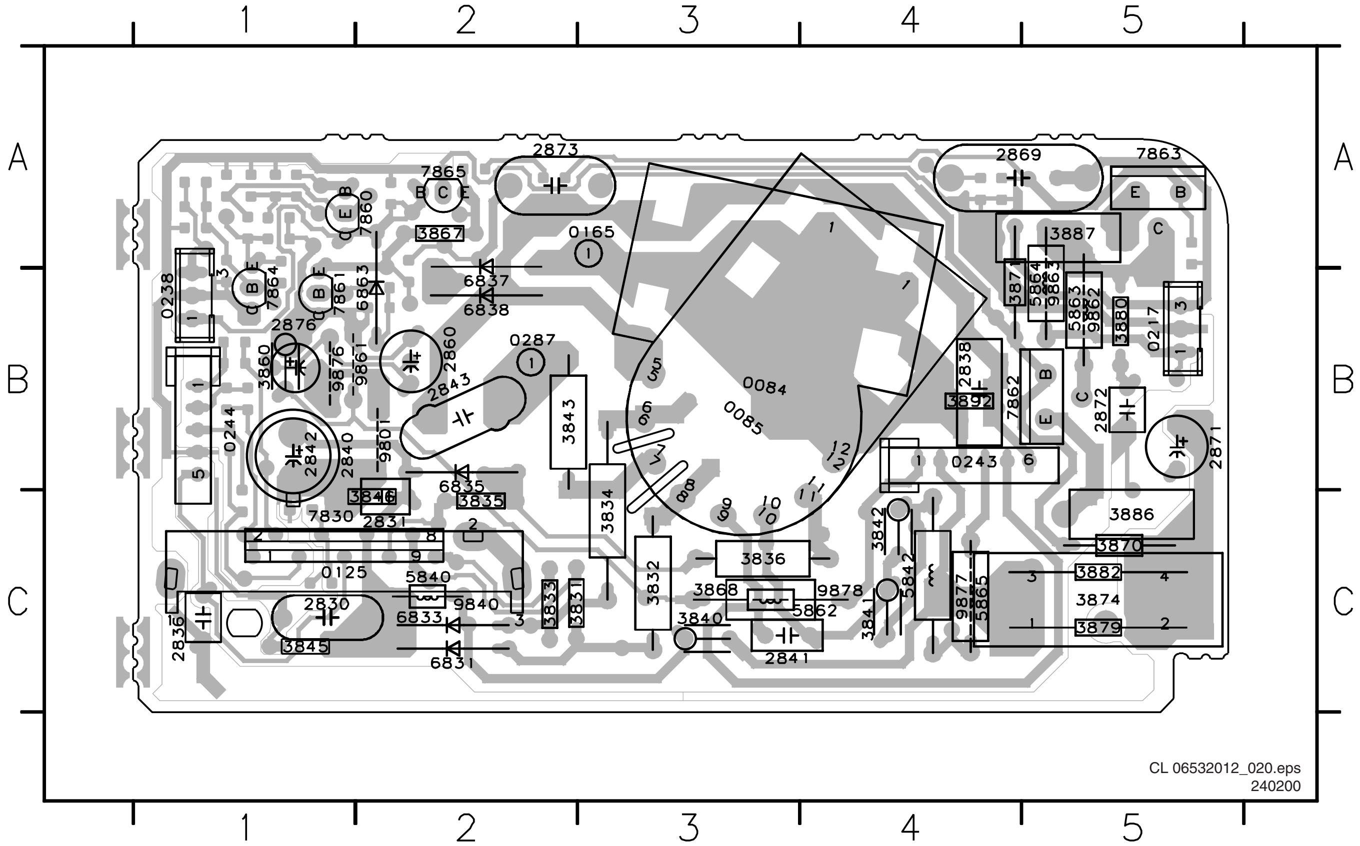
CRT	12 Pin
GND	Pin 1 & 12
VG1	Pin 5
Green	Pin 6
VG2	Pin 7
Red	Pin 8
Heater	Pin 9
Heater	Pin 10
Blue	Pin 11

Item no.	34PT6361 MEC TUBE	29PT6361/6961 MEC TUBE
0084	9P F DAF	9P F SEMI-DAF
2844	47pF 50V	-
2845	47pF 50V	-
2846	47pF 50V	-
2876	-	10uF 20% 50V
3837	560R 5%	Wire 0.58mm
3838	560R 5%	Wire 0.58mm
3839	560R 5%	Wire 0.58mm
3841	1R2 5% 0,25W	1R 5% 0,25W
3842	1R2 5% 0,25W	1R 5% 0,25W
3860	10R 5% 0,25W	-
3861	2K2 5%	3K3 5%
3862	2K2 5%	3K3 5%
3863	2K2 5%	3K3 5%
3864	220R 5%	560R 5%
3866	3K3 5%	2K2 5%
3875	2K2 5%	5K6 5%
3880	68R 5% 1/6W	47R 5% 1/6W
9821	Wire 0.58mm	Wire 0.58mm
9822	Wire 0.58mm	Wire 0.58mm
9861	-	Wire 0.58mm
9876	Wire 0.58mm	-

0084-A B7
0085-A B8
0125 A3
0165 A8
0204 E4
0217 F8
0243 D1
0244 C1
0287 E10
2830 A4
2831 A4
2832 B2
2833 B2
2834 C2
2835 D3
2836 C4
2837 B3
2838 A7
2840 D4
2841 C6
2842 D5
2843 D6
2844 B2
2845 B2
2846 C2
2860 F3
2861 G2
2862 F2
2863 F2
2864 G3
2865 F3
2866 G4
2867 F6
2868 G7
2869 F7
2870 F7
2871 E6
2872 G8
2873 F7
2874 F7
2875 F6
2876 F3
2877 F4
2878 E7
3831 B5
3832 C6
3833 B5
3834 B6
3835 C5
3836 C6
3837 A2
3838 B2
3839 B2
3840 D3
3841 D7
3842 D7
3843 C6
3845 D4
3846 D3
3847 F6
3860 E2
3861 F2
3862 F2
3863 G2
3864 G3
3865 F4
3866 G4
3867 G5
3868 E2
3869 G7
3870 E7
3871 F7
3872 F7
3873 G7
3874 E6
3875 F3
3876 F5
3877 F3
3878 F7
3880 G8
3881 G4
3882 G5
3883 E6
3884 F6
3885 G2
3886 G2
3887 H2
3888 H2
3889 H2
3890 H2
3892 A7
3893 F5
3894 F4
3895 F4
3896 F5
3899 G12
5840 D3
5842 D7
5860 G8
5861 E8
5862 E2
5865 E2
5886 G2
5888 H2
5890 H2
6831 B5
6832 D3
6833 B5
6835 B5
6837 A7
6838 A6
6861 F5
6862 F5
6867 F6
6868 F6
6869 G4
6870 F6
7830 B4
7860 G3
7861 F4
7862 E7
7863 G8
7864 F5
7865 E6
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9803 F7
9840 D3
9861 E2
9876 F3
9877 E2
9878 F2

Layout CRT panel (component side)

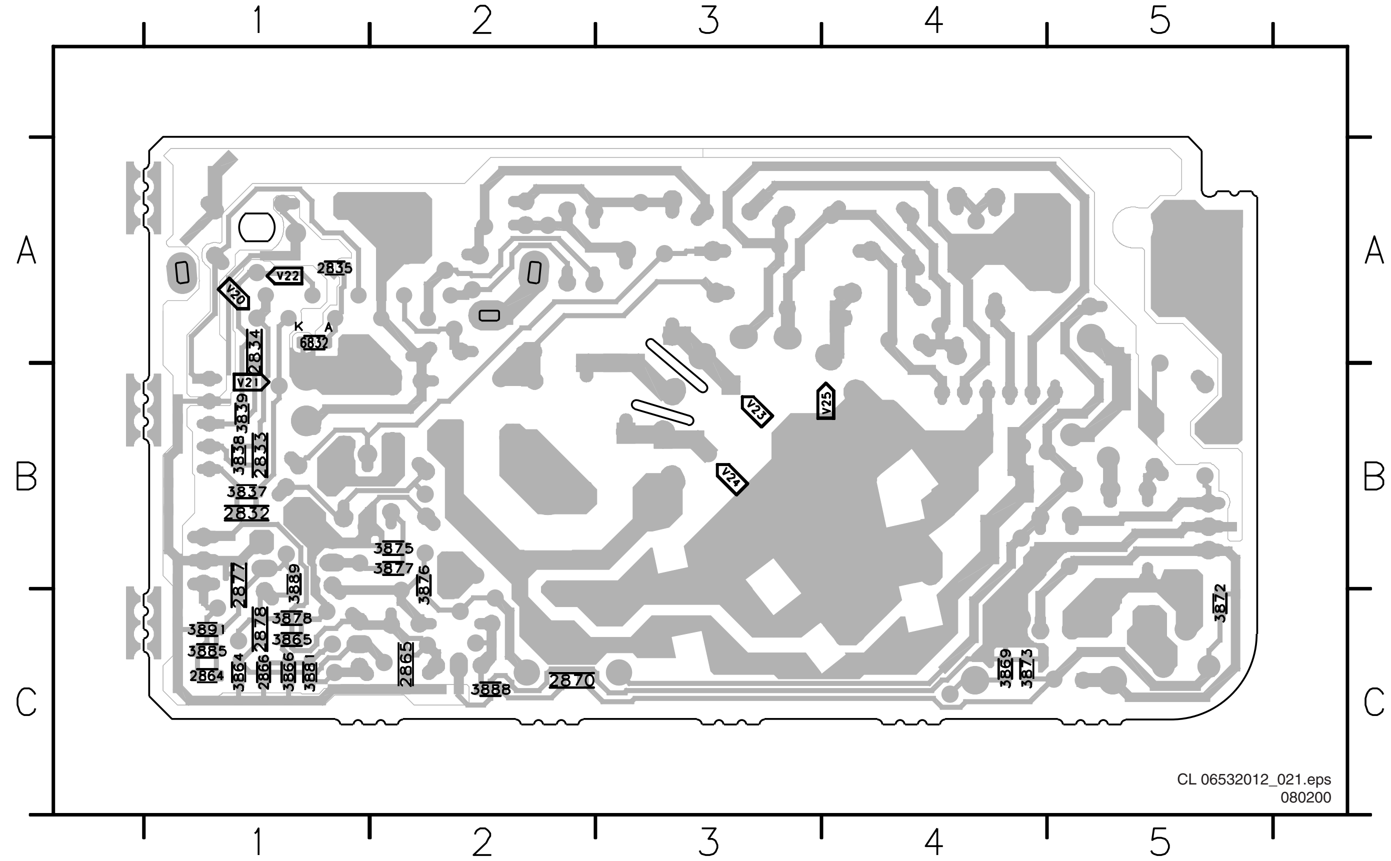
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0085 B3	2830 C1	2860 B2	3833 C2	3845 C1	3879 C5	5862 C4	6838 B2	7865 A2	9878 C4
0125 C1	2831 C2	2869 A4	3834 C3	3846 C2	3880 B5	5863 B5	6863 B2	9801 B2	
0165 A3	2836 C1	2871 B5	3835 C2	3860 B1	3882 C5	5864 B5	7830 C1	9840 C2	
0217 B5	2838 B4	2872 B5	3836 C3	3867 A2	3886 C5	5865 C4	7860 A2	9861 B2	
0238 B1	2840 B1	2873 A2	3840 C3	3868 C3	3887 A5	6831 C2	7861 B1	9862 B5	
0243 B4	2841 C3	2876 B1	3841 C4	3870 C5	3892 B4	6833 C2	7862 B4	9863 B5	
0244 B1	2842 B1	3831 C2	3842 C4	3871 B4	5840 C2	6835 B2	7863 A5	9876 B1	



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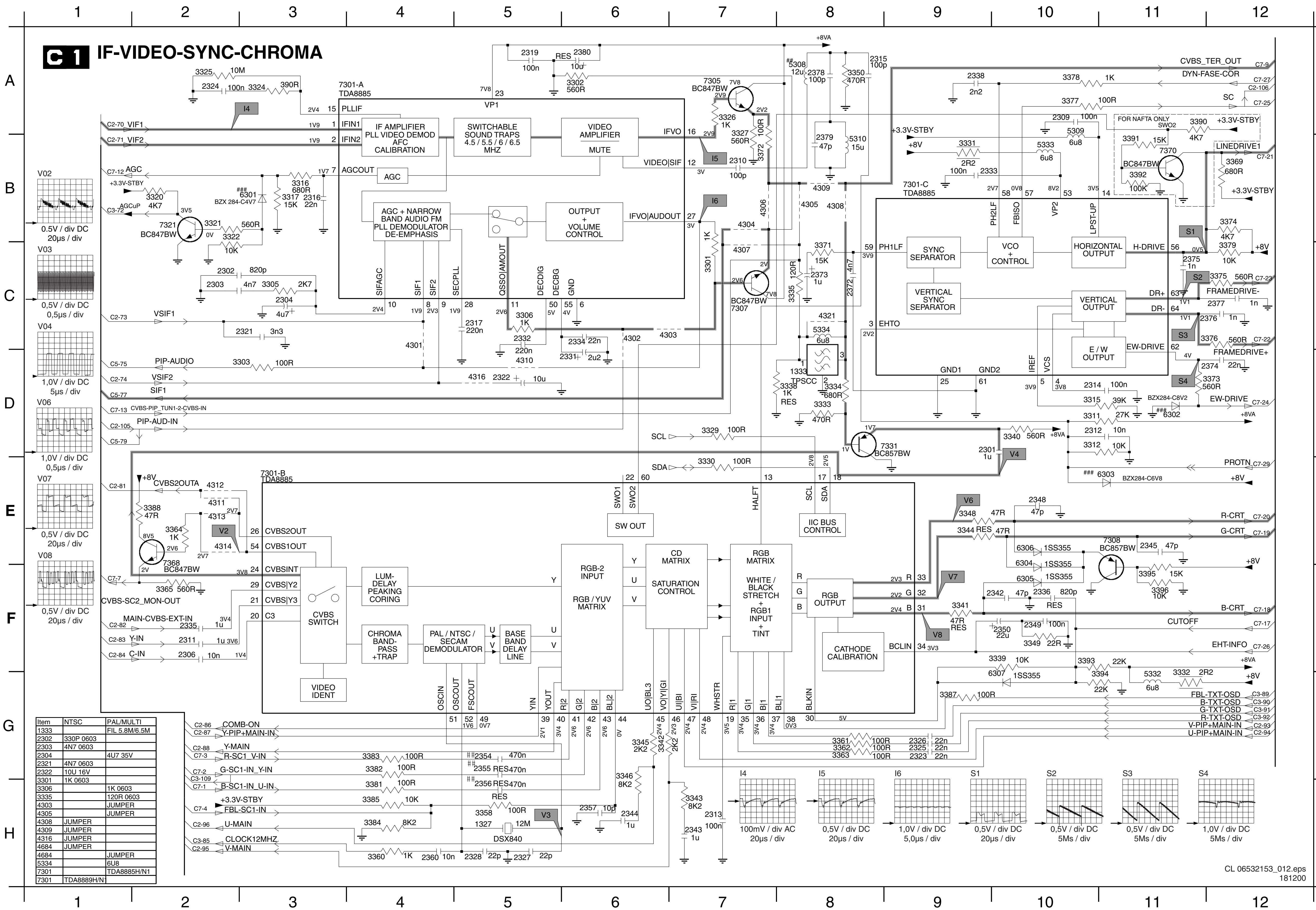
Layout CRT panel (copper side)

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2833 B1	2864 C1	2870 C2	3837 B1	3864 C1	3869 C4	3875 B2	3878 C1	3888 C2	6832 A1
2834 A1	2865 C2	2877 B1	3838 B1	3865 C1	3872 C5	3876 B2	3881 C1	3889 B1	



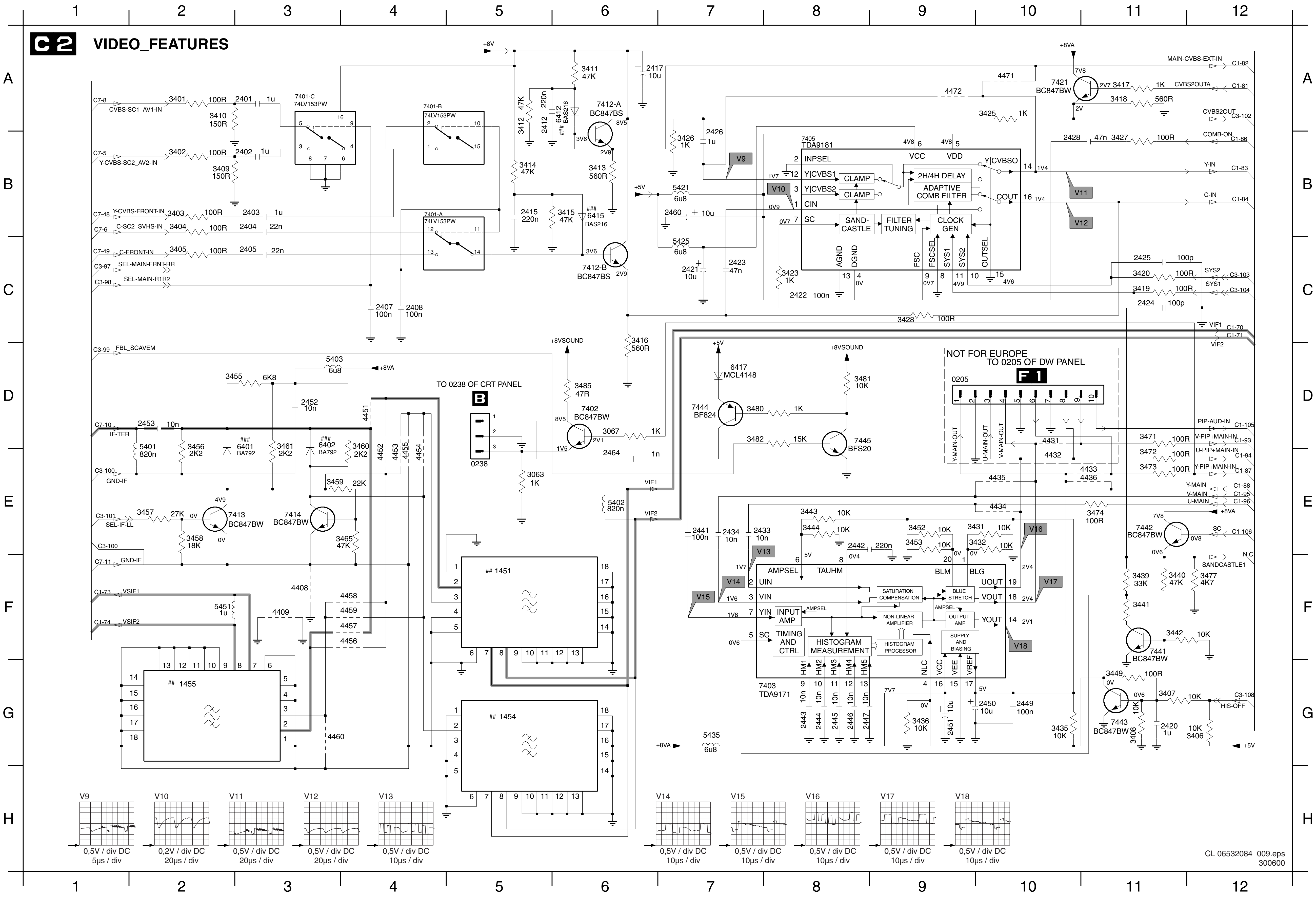
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IF - VIDEO - SYNC - CHROMA



Item	NTSC	PAL/MULTI
1333		FIL 5.8M/6.5M
2302	330P 0603	
2303	4N7 0603	
2304		4U7 35V
2321	4N7 0603	
2322	10U 16V	
3301	1K 0603	
3306		1K 0603
3335		120R 0603
4303		JUMPER
4305		JUMPER
4308	JUMPER	
4309	JUMPER	
4316	JUMPER	
4684	JUMPER	
4684		JUMPER
5334		6U8
7301		TDA8885H/N1
7301	TDA8889H/N1	

Video features



0205 D10	3482 D7
0238 E5	3485 D6
1451 F5	4408 F3
1454 G5	4409 F3
1455 G2	4431 D10
2401 A3	4432 E10
2402 B3	4433 E10
2403 B3	4434 E10
2404 B3	4435 E10
2405 C3	4436 E10
2407 C4	4451 D4
2408 C4	4452 D4
2412 A5	4453 D4
2415 B5	4454 D4
2417 A6	4455 D4
2420 G11	4456 F4
2421 C7	4457 F4
2422 C8	4458 F4
2423 C7	4459 F4
2424 C11	4460 G3
2425 C11	4471 A10
2426 A7	4472 A9
2428 B10	5401 D2
2433 E7	5402 E6
2434 E7	5403 D3
2441 E7	5421 B7
2442 E8	5425 C7
2443 G8	5435 G7
2444 G8	5451 F2
2445 G8	6401 E3
2446 G8	6402 D3
2447 G8	6412 A6
2449 G10	6415 B6
2450 G10	6417 D7
2451 G9	7401 A3
2452 D3	7402 D6
2453 D2	7403 G7
2460 B7	7405 B8
2464 E6	7412-A A6
3063 E5	7412-B C6
3067 D6	7413 E2
3401 A2	7414 E3
3402 B2	7421 A10
3403 B2	7441 F11
3404 B2	7442 E11
3405 C2	7443 G11
3406 G12	7444 D7
3407 G11	7445 D8
3408 G11	
3409 B2	
3410 A2	
3411 A6	
3412 A5	
3413 B6	
3414 B5	
3415 B6	
3416 C6	
3417 A11	
3418 A11	
3419 C11	
3420 C11	
3423 C8	
3425 A10	
3426 B7	
3427 B11	
3428 C9	
3431 E10	
3432 E10	
3435 G10	
3436 G9	
3439 F11	
3440 F11	
3441 F11	
3442 F11	
3443 E8	
3444 E8	
3449 G11	
3452 E9	
3453 E9	
3455 D2	
3456 D2	
3457 E2	
3458 E2	
3459 E3	
3460 D4	
3461 D3	
3465 F4	
3471 D11	
3472 E11	
3473 E11	
3474 E11	
3477 F12	
3480 D7	
3481 D8	

Diversity tables SSB panel

Diversity tables diagram C2

Item	HISTOGRAM WITH DW	WITHOUT HISTOGRAM & DW
0205	CON 10P	
2420	100P 50V	
2433	10N 50V	
2434	10N 50V	
2441	100N 16V	
2442	220N 16V	
2443	10N 50V	
2444	10N 50V	
2445	10N 50V	
2446	10N 50V	
2447	10N 50V	
2449	100N 16V	
2450	10U 16V	
2451	10U 16V	
3406	10K 0603	
3407	10K 0603	
3408	10K 0603	
3431	22K 0603	
3432	22K 0603	
3435	18K 0603	
3436	15K 0603	
3439	10K 0603	
3443	JUMPER	
3444	220K 0603	
3452	22K 0603	
3453	18K 0603	
4431		JUMPER
4432		JUMPER
4433		JUMPER
4434		JUMPER
4435		JUMPER
4436		JUMPER
5435	6U8	
6418	1SS355	
6419	1SS355	
6420	1SS355	
7403	TDA9171T/N1	
7443	BC847BW	

Item	Analog Combfilter - Multi (EU/AP/LT)	No Combfilter
2421	10U 16V	,
2422	100N 16V	,
2423	47N 16V	,
2424	100P 50V	,
2425	100P 50V	,
2426	1U 10V	,
2428	47N 16V	,
2460	10U 16V	,
3417	1K 5%	,
3417	,	1K 5%
3418	560R 5%	560R 5%
3419	100R 5%	,
3420	100R 5%	,
3423	1K 5%	,
3425	1K 5%	,
3426	1K 5%	,
3427	100R 5%	,
3428	,	100R 5%
4471	,	JUMPER
5421	6U8 5%	,
5425	6U8 5%	,
7405	TDA9181	,
7421	BC847BW	BC847BW

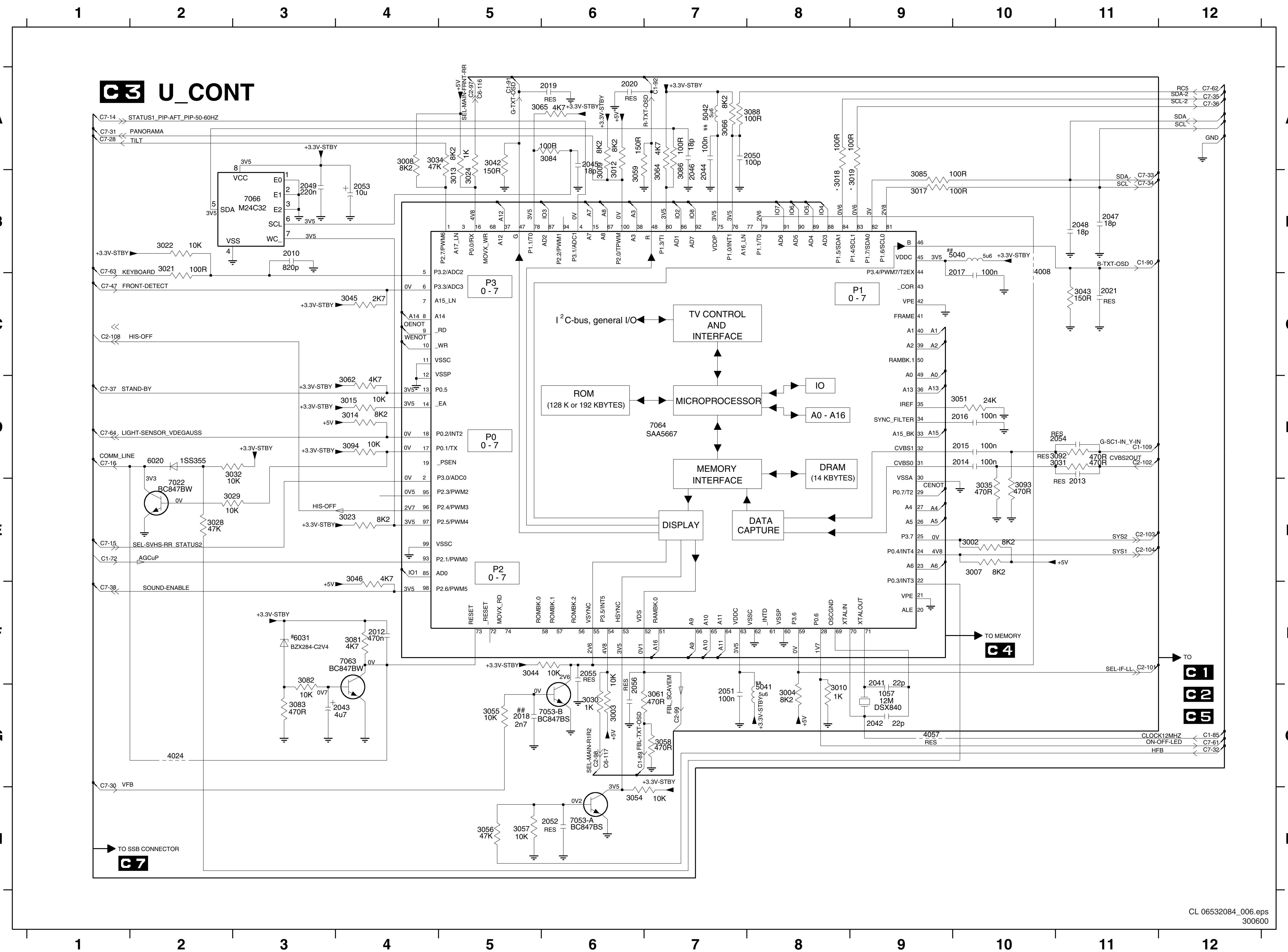
Item	NTSC-M	AP PAL/Multi	China Multi
1451	,	,	OFWM3956L 38MHz
1451	OFWM1967L 45,75MHz	,	
1451	,	OFWK7265L 38,9MHz	
1454	,	,	OFWK3955L 38MHz
1455	,	,	OFWK9352L 38MHz
1455	,	OFWK9361L 38,9MHz	
2452	,	10N 50V	10N 50V
3455	,	6K8 5%	6K8 5%
3456	,	2K2 5%	2K2 5%
3457	,	27K 5%	27K 5%
3458	,	18K 5%	18K 5%
3459	,	,	22K 5%
3460	,	,	2K2 5%
3461	,	2K2 5%	2K2 5%
3465	,	,	47K 5%
4451	jumper	jumper	
4452	,	,	jumper
4453	,	jumper	
4455	jumper	,	jumper
4457	,	jumper	jumper
4460	,	jumper	jumper
5403	,	6U8 5%	6U8 5%
6401	,	1SS356	1SS356
6402	,	,	1SS356
7413	,	BC847BW	BC847BW
7414	,	,	BC847BW

Diversity table diagram C3

Item	AP - Taiwan	AP 100Pg Txt	China Non Txt	AP - Korea	AP - ME 100Pg Txt	AP 10Pg Txt	AP - ME 10Pg Txt
2058	,	100N 16V	,	,	100N 16V	,	,
3010	,		,	,	1K 5%	,	,
3028	,	47K 5%	,	,	47K 5%	,	,
3029	,	10K 5%	,	,	10K 5%	,	,
3032	,	10K 5%	,	,	10K 5%	,	,
3033	,	10K 5%	,	,	10K 5%	,	,
3090	,	10K 5%	,	,	10K 5%	,	,
3091	,	10K 5%	,	,	10K 5%	,	,
3094	,	10K 5%	10K 5%	,	10K 5%	,	,
5050	,	5U6 10%	,	,	5U6 10%	,	,
6020	,	1SS355	,	,	1SS355	,	,
7022	,	BC847BW	,	,	BC847BW	,	,
7070	,	UPD431000	,	,	UPD431000	,	,

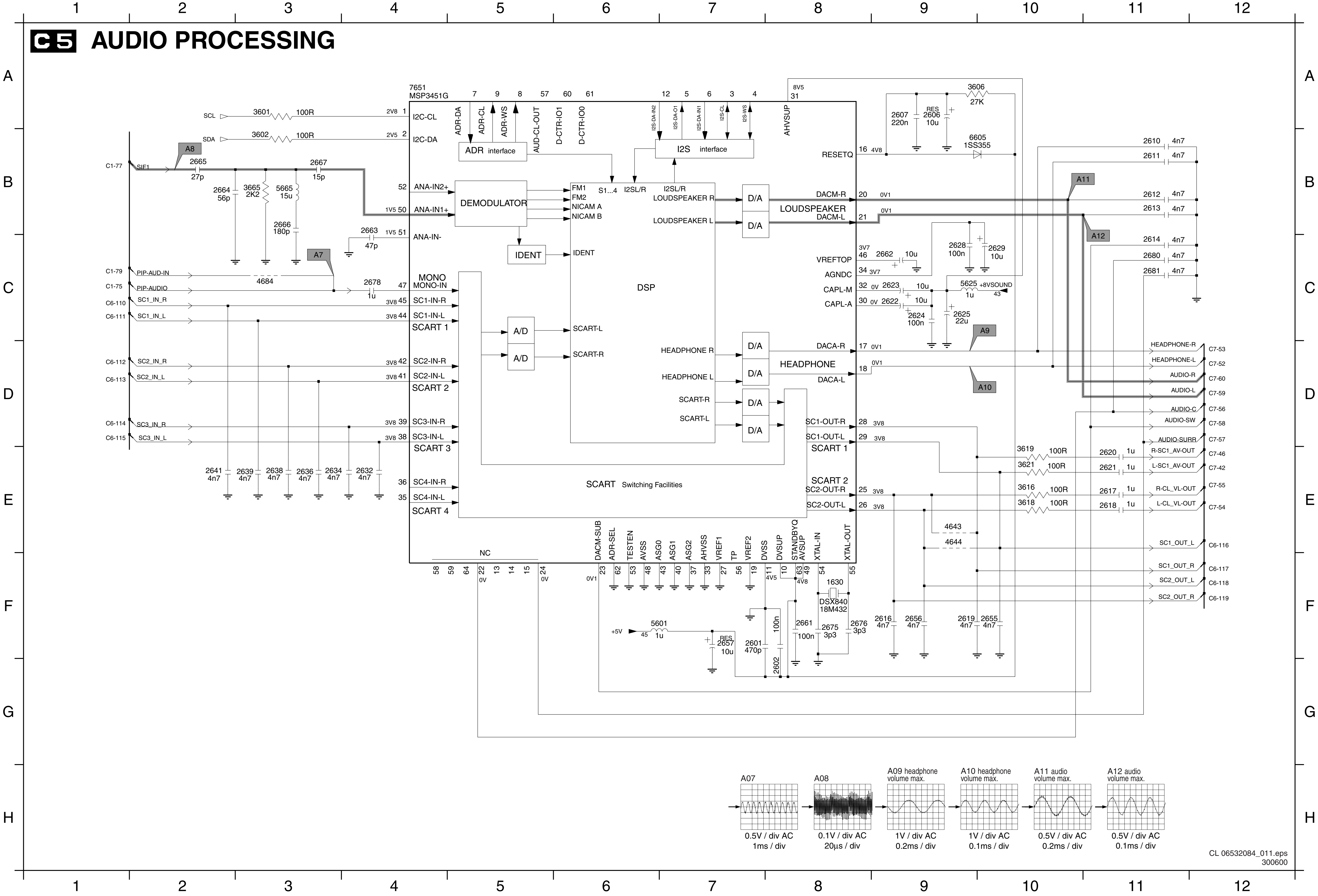
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051200

U Cont



1057 G9
2010 D3
2012 F4
2013 E11
2014 D10
2015 D10
2016 D10
2017 B10
2018 G5
2019 A5
2020 A6
2021 C11
2041 G9
2042 G9
2043 G4
2044 B7
2045 B6
2046 B7
2047 B11
2048 B11
2049 B3
2050 B8
2051 G7
2052 H6
2053 B4
2054 D11
2055 F6
2056 G6
3002 E10
3003 G6
3004 G8
3007 E10
3008 B4
3009 B6
3010 G8
3012 A6
3013 B5
3014 D4
3015 D4
3017 B9
3018 B8
3019 B9
3021 D2
3022 D2
3023 E4
3024 B5
3028 D2
3029 E2
3030 G6
3031 D11
3032 D3
3034 B5
3035 E10
3042 B5
3043 C11
3044 F5
3045 D4
3046 E4
3051 D10
3054 H6
3055 G5
3056 H5
3057 H5
3058 G7
3059 B6
3061 G7
3062 C4
3064 B7
3065 A6
3066 A7
3081 F4
3082 F3
3083 G3
3084 A6
3085 B9
3086 B7
3088 A7
3092 D11
3093 E10
3094 D4
4008 B10
4024 G2
4057 G9
5040 B10
5041 G8
5042 A7
6020 D2
6031 F3
7022 E2
7053-A H6
7053-B G5
7063 F4
7064 D7
7066 B3

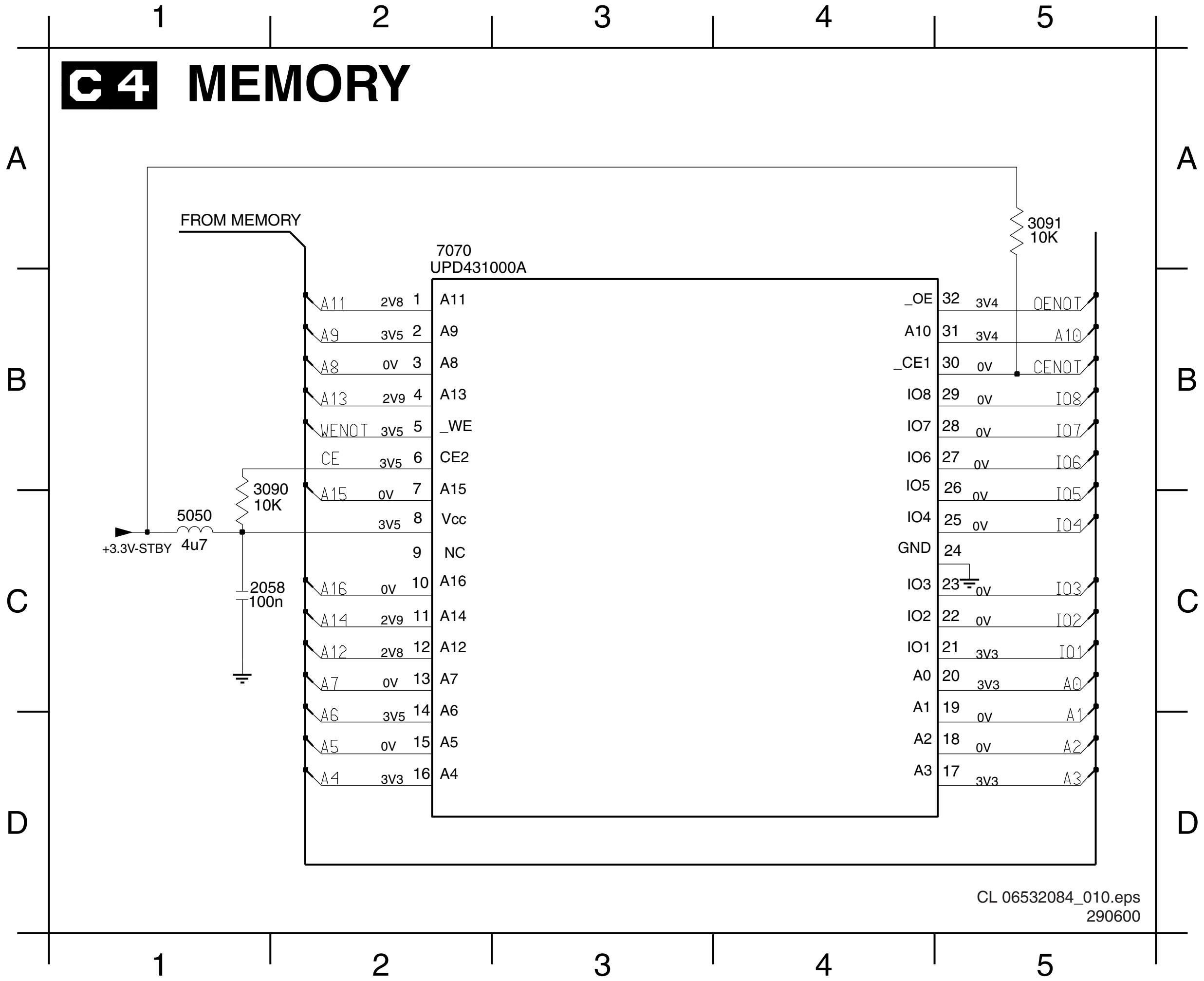
Audio processing



1630 F8
2601 G7
2602 G8
2606 A9
2607 A9
2610 B11
2611 B11
2612 B11
2613 B11
2614 C11
2616 F9
2617 E11
2618 E11
2619 F10
2620 E11
2621 E11
2622 C9
2623 C9
2624 C9
2625 C10
2628 C9
2629 C9
2632 E4
2634 E3
2636 E3
2638 E3
2639 E3
2641 E2
2655 F10
2656 F9
2657 F7
2661 F8
2662 C9
2663 C4
2664 B2
2665 B2
2666 B3
2667 B3
2675 F8
2676 F8
2678 C4
2680 C11
2681 C11
3601 A3
3602 B3
3606 A10
3616 E10
3618 E10
3619 E10
3621 E10
3665 B3
4643 E10
4644 E9
4684 C3
5601 F6
5625 C10
5665 B3
6605 B10
7651 A4

Memory

2058 C1
3090 B1
3091 A5
5050 C1
7070 A2



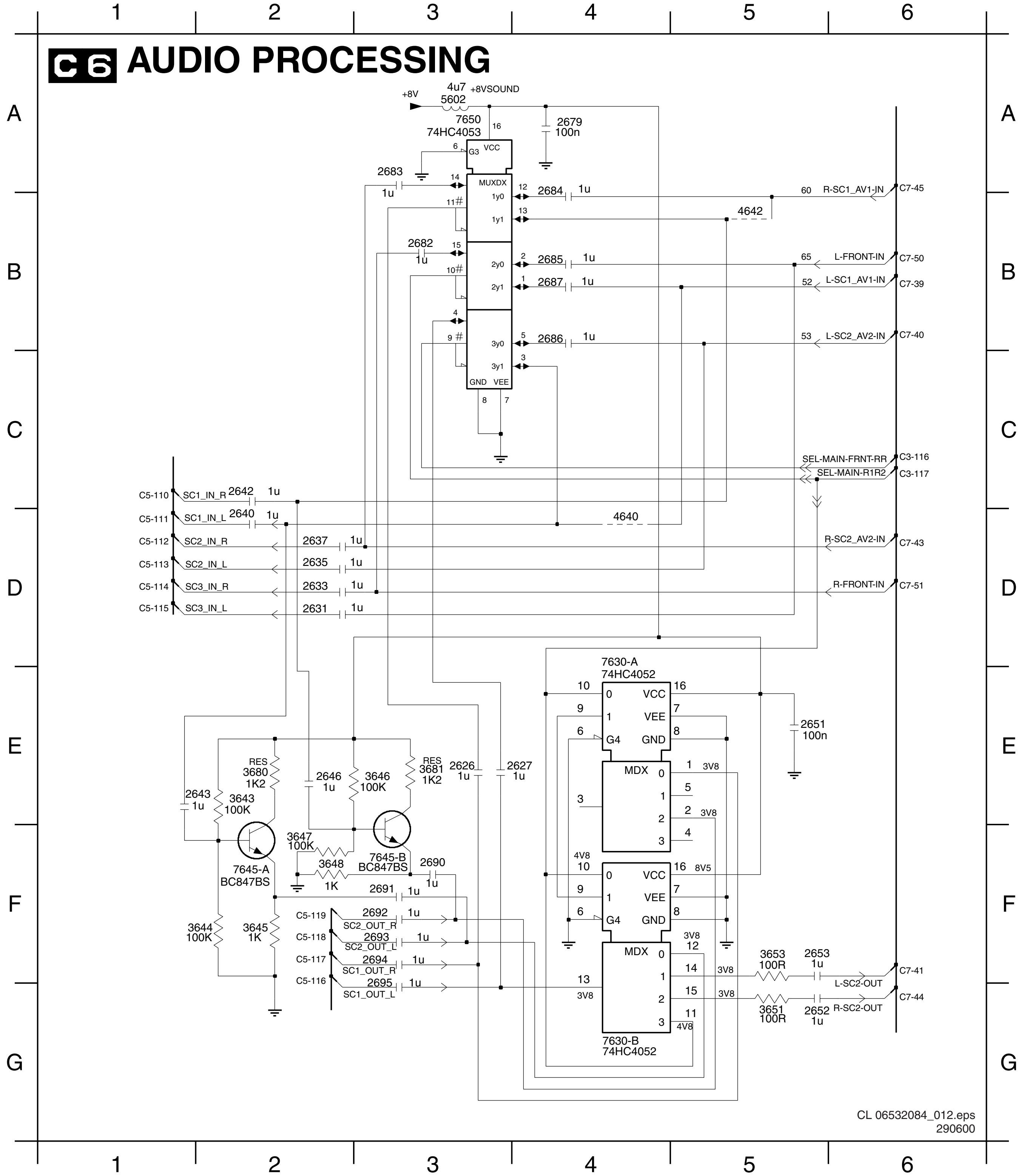
Diversity table diagram C5 & C6

Item	VIRTUAL DOLBY	NO VIRTUAL DOLBY	NO VIRTUAL DOLBY /71 ONLY
2610	1N 50V		
2611	1N 50V		
2614	4N7 50V		
2622	10U 16V		
2631	1U 10V		
2632	4N7 50V		
2633	1U 10V		
2634	4N7 50V		
2679		100N 16V	100N 16V
2682		1U 10V	1U 10V
2683		1U 10V	1U 10V
2684		1U 10V	1U 10V
2685		1U 10V	1U 10V
2686		1U 10V	1U 10V
2687		1U 10V	1U 10V
4640	JUMPER		
4642	JUMPER		
7630		74HC4052PW	74HC4052PW
7651		MSP3415D-FH-B3	,
7651			MSP3435G-FH-B5
7651	MSP3451G-FH-A1		

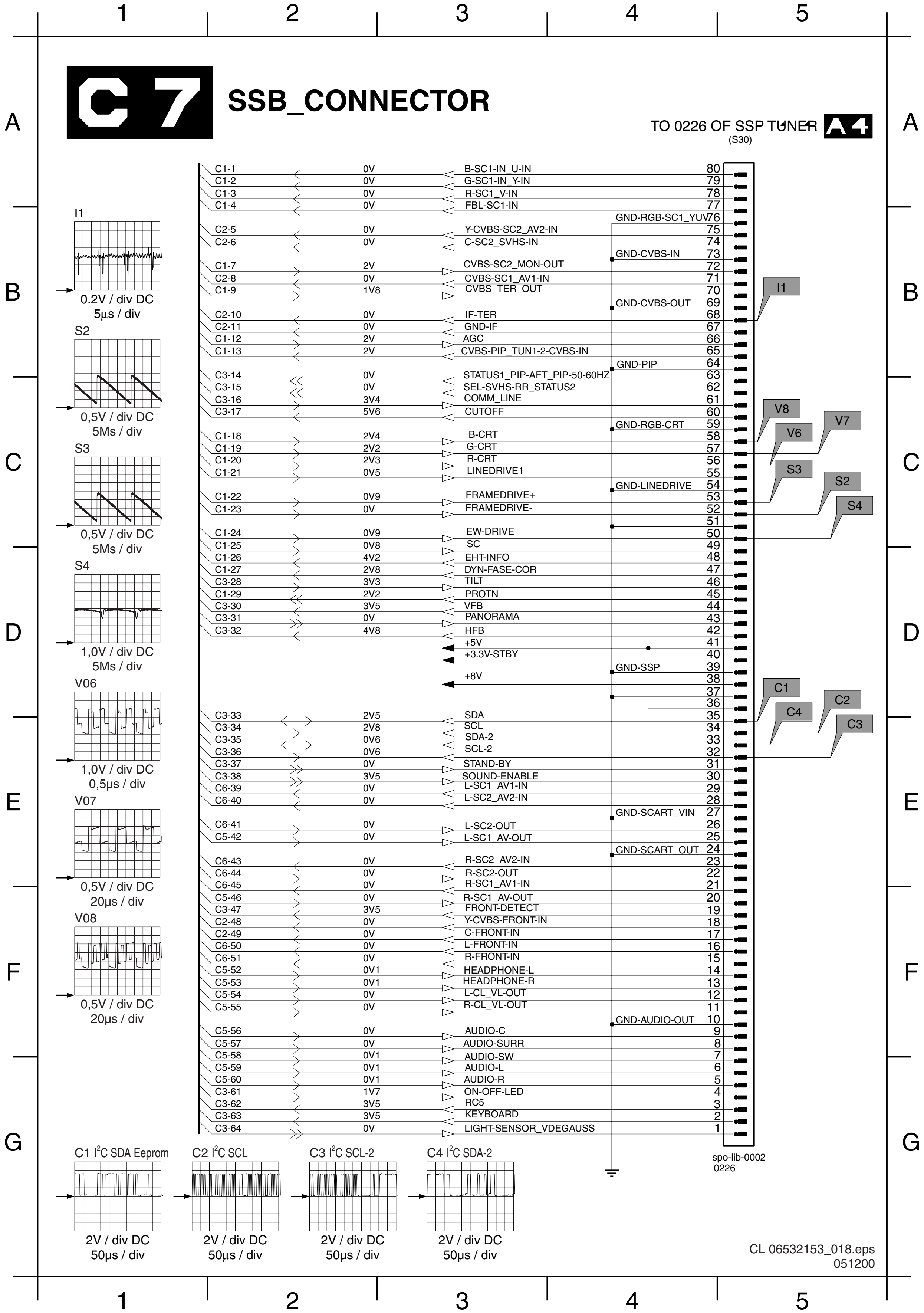
CL 06532153_017.eps
051200

Audio processing

2626 E3 2627 E3 2631 D2 2633 D2 2635 D2 2637 D2 2640 D2 2642 D2 2643 E2 2646 E2 2651 E5 2652 G5 2653 F5 2679 A4 2682 B3 2683 A3 2684 B4 2685 B4 2686 B4 2687 B4 2690 F3 2691 F3 2692 F3 2693 F3 2694 F3 2695 G3 3643 E2 3644 F2 3645 F2 3646 E3 3647 F2 3648 F2 3651 G5 3653 F5 3680 E2 3681 E3 4640 D4 4642 B5 5602 A3 7630 A3 7645-A F2 7645-B F3 7650-A D4 7650-B G4

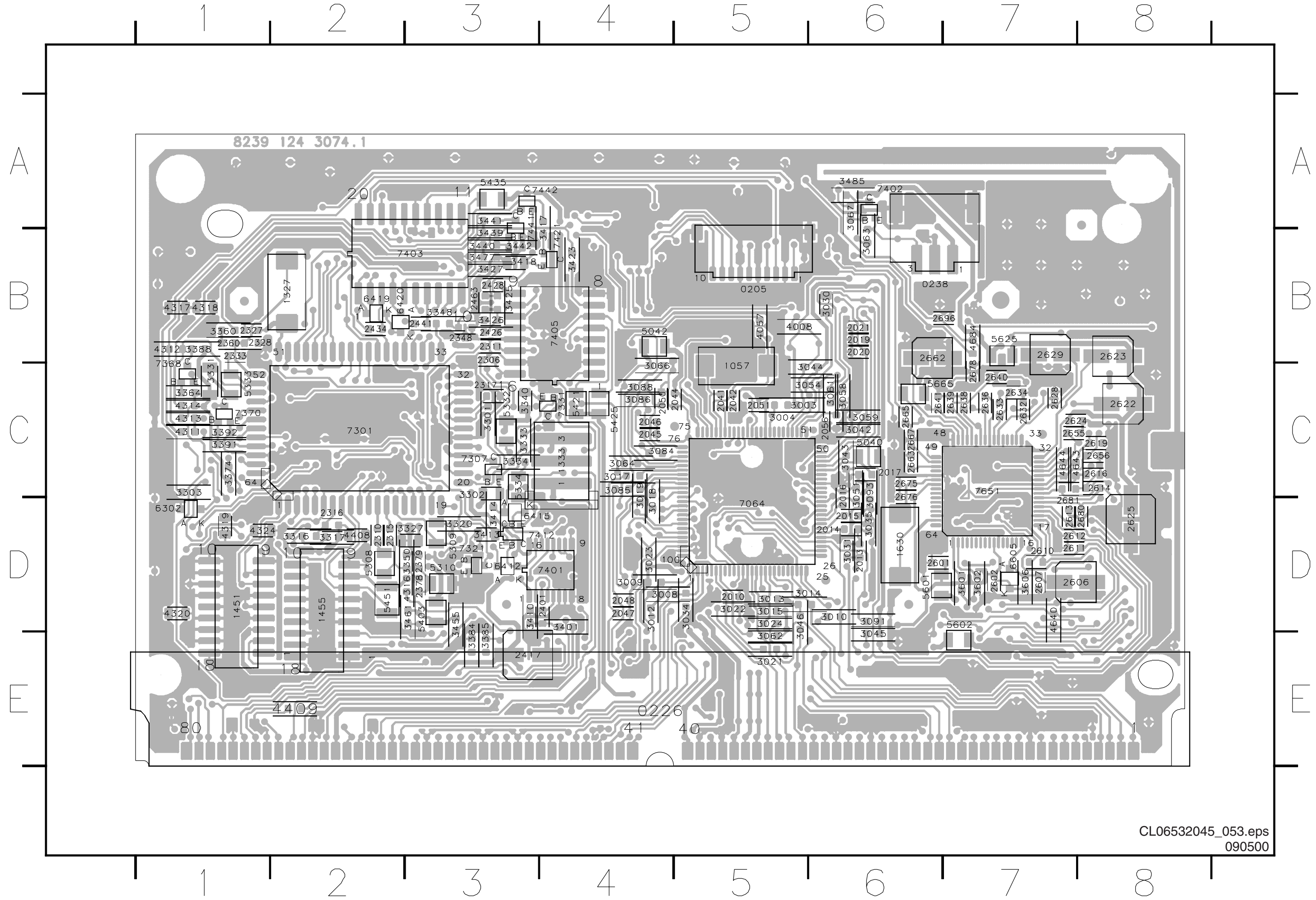


SSB connector



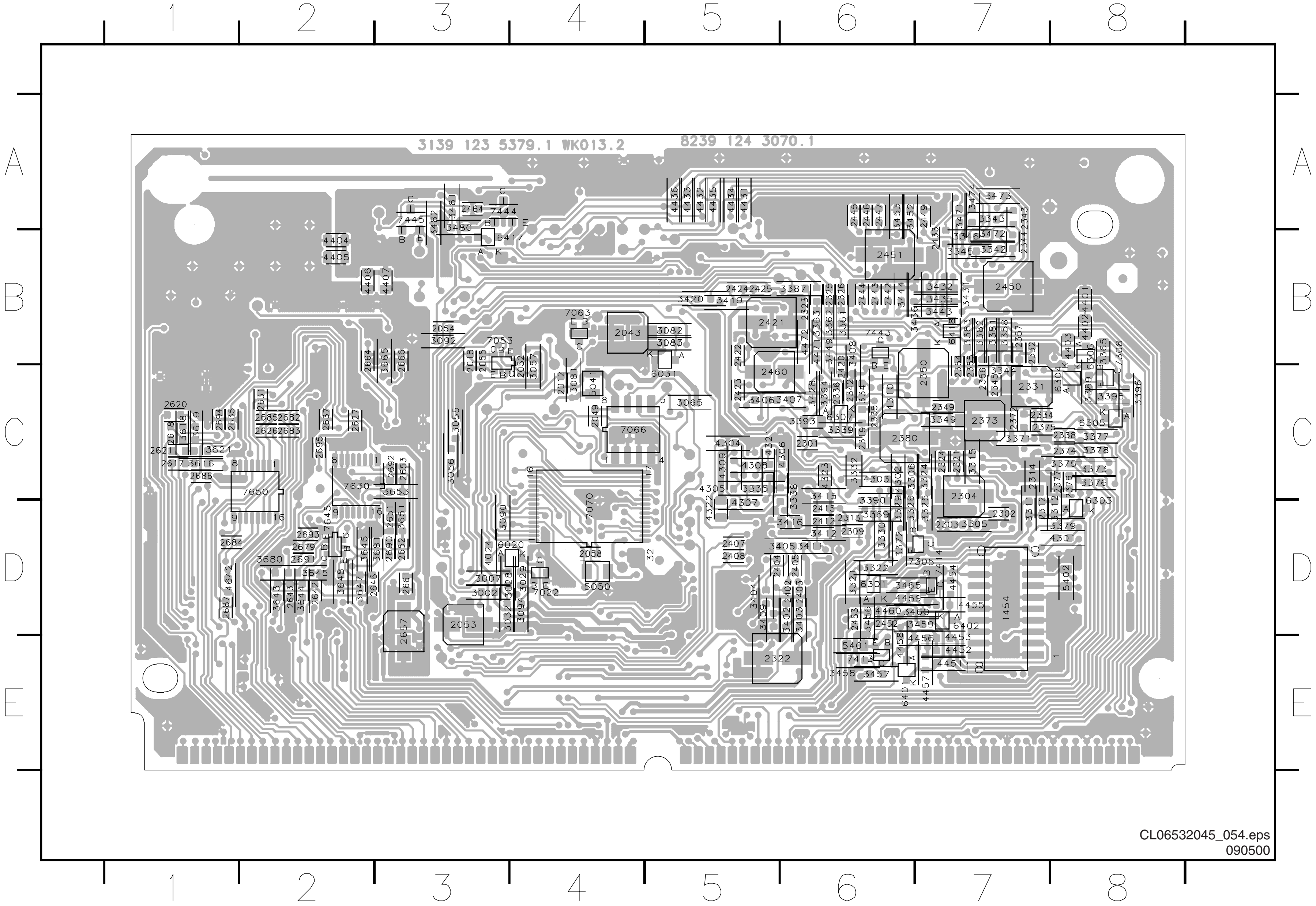
Layout SSB (component side)

0205	B5	2047	D4	2441	B3	2638	C7	3014	D5	3062	E5	3350	D3	3455	D3	4644	C7	6420	B2
0226	E4	2048	D4	2463	B3	2639	C7	3015	D5	3063	B6	3360	B1	3461	D3	4684	B7	6605	D7
0238	B6	2050	C4	2601	D6	2640	C7	3017	C4	3064	C4	3364	C1	3477	B3	5040	C6	7064	D5
1057	C5	2051	C5	2602	D7	2641	C6	3018	D4	3066	C4	3374	C1	3485	A6	5042	B4	7301	C2
1327	B2	2056	C6	2606	D7	2655	C7	3019	C4	3067	A6	3384	E3	3601	D7	5308	D2	7307	C3
1333	C4	2306	B3	2607	D7	2656	C8	3021	E5	3084	C4	3385	E3	3602	D7	5309	D3	7321	D3
1451	D1	2310	D2	2610	D7	2662	B6	3022	D5	3085	C4	3388	B1	3606	D7	5310	D3	7331	C4
1455	D2	2311	B3	2611	D7	2663	C6	3023	D4	3086	C4	3391	C1	4008	B5	5332	C3	7368	C1
1630	D6	2315	D2	2612	D7	2665	C6	3024	D5	3088	C4	3392	C1	4057	B5	5333	C1	7370	C1
2010	D5	2316	D2	2613	D7	2667	C6	3030	B6	3091	D6	3401	D4	4311	C1	5334	C3	7401	D4
2013	D6	2317	C3	2614	C8	2675	C6	3031	D6	3093	C6	3410	D3	4312	B1	5403	D3	7402	A6
2014	D6	2327	B1	2616	C8	2676	C6	3034	D5	3301	C3	3413	D3	4313	C1	5421	C4	7403	B3
2015	D6	2328	B1	2619	C8	2678	C7	3035	D6	3302	C3	3414	D3	4314	C1	5425	C4	7405	B4
2016	C6	2333	B1	2622	C8	2680	D8	3042	C6	3303	C1	3417	A4	4316	D3	5435	A3	7412	D4
2017	C6	2348	B3	2623	B8	2681	D7	3043	C6	3316	D2	3418	B3	4317	B1	5451	D2	7421	B4
2019	B6	2360	B1	2624	C7	2696	B7	3044	C6	3317	D2	3423	B4	4318	B1	5601	D6	7441	A3
2020	B6	2378	D3	2625	D8	3003	C5	3045	E6	3320	D3	3425	B3	4319	D1	5602	D7	7442	A4
2021	B6	2379	D3	2628	C7	3004	C5	3046	D5	3327	D3	3426	B3	4320	D1	5625	B7	7651	C7
2041	C5	2401	D4	2629	B7	3008	D4	3051	C6	3331	C1	3427	B3	4324	D1	5665	C6		
2042	C5	2417	E3	2632	C7	3009	D4	3054	C5	3333	C3	3439	B3	4408	D2	6302	D1		
2044	C5	2426	B3	2633	C7	3010	D6	3058	C6	3334	C3	3440	B3	4409	E2	6412	D3		
2045	C4	2428	B3	2634	C7	3012	D4	3059	C6	3340	C3	3441	A3	4640	D7	6415	D3		
2046	C4	2434	B2	2636	C7	3013	D5	3061	C6	3348	B3	3442	B3	4643	C7	6419	B2		



Layout SSB (copper side)

1454	D7	2338	C8	2424	B5	2653	C3	3090	D3	3365	B8	3415	C6	3621	C1	4405	B2	6304	C8
2012	C4	2342	C6	2425	B5	2657	D3	3092	B3	3369	D6	3416	D6	3643	D2	4406	B2	6305	C8
2018	B3	2343	A7	2433	B7	2661	D3	3094	D4	3371	C7	3419	B5	3644	D2	4407	B3	6306	B8
2043	B4	2344	B7	2442	B6	2664	B2	3305	D7	3372	D6	3420	B5	3645	D2	4431	A5	6307	C6
2049	C4	2345	C7	2443	B6	2666	B3	3306	C6	3373	C8	3428	C6	3646	D2	4432	A5	6401	E6
2052	C4	2349	C7	2444	B6	2679	D2	3311	D7	3375	C8	3431	B7	3647	D2	4433	A5	6402	D7
2053	D3	2350	C7	2445	A6	2682	C2	3312	D8	3376	C8	3432	B7	3648	D2	4434	A5	6417	B4
2054	B3	2354	C7	2446	A6	2683	C2	3315	C7	3377	C8	3435	B7	3651	D3	4435	A5	6418	B7
2055	B3	2355	C7	2447	A6	2684	D1	3321	D6	3378	C8	3436	B6	3653	C3	4436	A5	7022	D4
2058	D4	2356	C7	2449	A7	2685	C2	3322	D6	3379	D8	3443	B7	3665	B3	4451	E7	7053	B3
2301	C6	2357	B7	2450	B7	2686	C1	3324	C7	3381	B7	3444	B6	3680	D2	4452	E7	7063	B4
2302	D7	2372	C7	2451	B6	2687	D1	3325	D7	3382	B7	3449	B6	3681	D3	4453	E7	7066	C4
2303	D7	2373	C7	2452	D6	2690	D3	3326	D6	3383	B7	3452	A6	4024	D3	4454	D7	7070	D4
2304	C7	2374	C8	2453	D6	2691	D2	3329	D6	3387	B6	3453	A6	4301	D8	4455	D7	7305	D7
2309	D6	2375	C7	2460	C5	2692	C3	3330	D6	3389	C8	3456	D6	4302	C6	4456	E7	7308	B8
2312	D7	2376	C8	2464	A3	2693	D2	3332	C6	3390	D6	3457	E6	4303	C6	4457	E7	7413	E6
2313	D6	2377	C8	2617	C1	2694	C1	3335	C5	3393	C6	3458	E6	4304	C5	4458	E6	7414	D7
2314	C7	2380	C6	2618	C1	2695	C2	3338	C6	3394	C6	3459	D7	4305	C5	4459	D6	7443	B6
2319	C6	2402	D6	2620	C1	3002	D3	3339	C6	3395	C8	3460	D7	4306	C6	4460	D6	7444	A3
2321	C7	2403	D6	2621	C1	3007	D3	3341	C6	3396	C8	3465	D6	4307	D5	4471	B6	7445	A3
2322	E5	2404	D5	2626	C2	3028	D3	3342	B7	3402	D6	3471	A7	4308	C5	4472	B6	7630	C2
2323	B6	2405	D6	2627	C2	3029	D4	3343	A7	3403	D6	3472	B7	4309	C5	4642	D1	7645	D2
2324	C7	2407	D5	2631	C2	3032	D3	3344	C7	3404	D5	3473	A7	4310	C6	5041	C4	7650	C2
2325	B6	2408	D5	2635	C1	3055	C3	3345	B7	3405	D6	3474	A7	4321	C5	5050	D4		
2326	B6	2412	D6	2637	C2	3056	C3	3346	B7	3406	C5	3480	A3	4322	D5	5401	E6		
2331	C7	2415	D6	2642	D2	3057	C4	3349	C7	3407	C6	3481	A3	4323	C6	5402	D8		
2332	B7	2420	C6	2643	D2	3065	C5	3358	B7	3408	B6	3482	A3	4401	B8	6020	D4		
2334	C7	2421	B5	2646	D2	3081	C4	3361	B6	3409	D5	3616	C1	4402	B8	6031	C5		
2335	C6	2422	B5	2651	D3	3082	B5	3362	B6	3411	D6	3618	C1	4403	B8	6301	D6		
2336	C6	2423	C5	2652	D3	3083	B5	3363	B6	3412	D6	3619	C1	4404	B2	6303	D8		

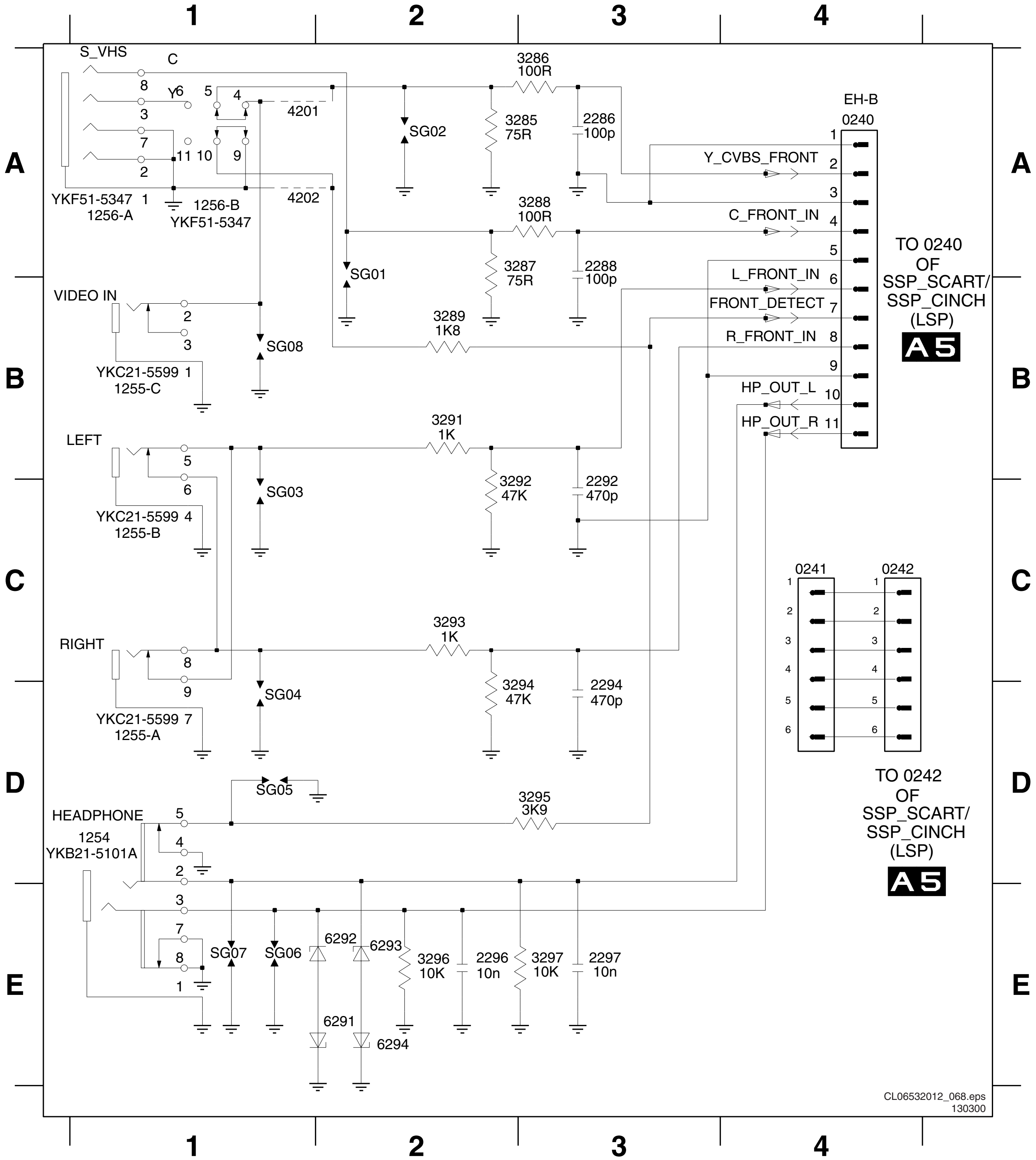


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Side I/O

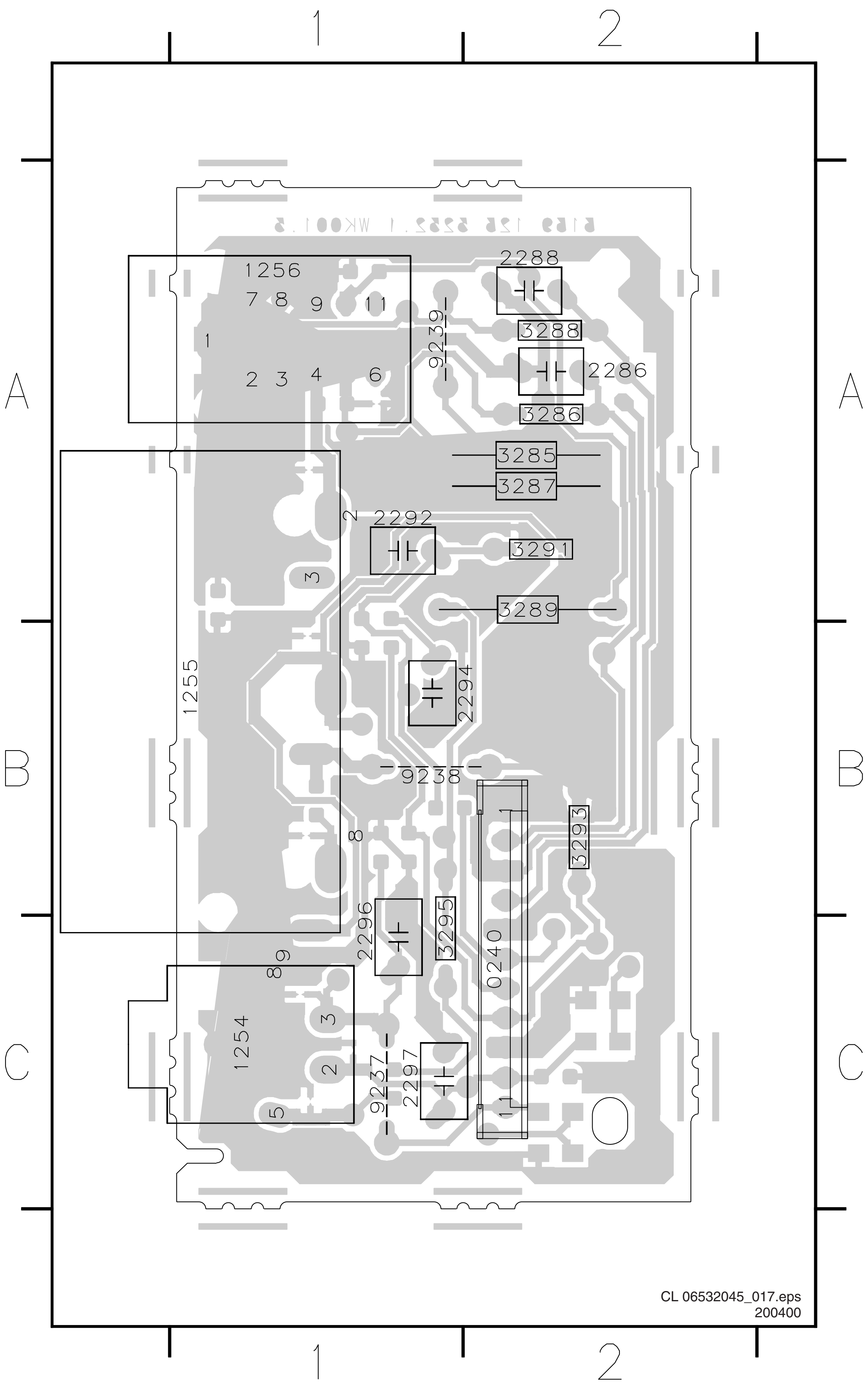
D SIDE IO PANEL

0240 A4	1255-C B1	2294 C3	3288 A3	3295 D3	6292 E2	SG04 D1
0241 C4	1256-A A1	2296 E2	3289 B2	3296 E2	6293 E2	SG05 D1
0242 C4	1256-B A1	2297 E3	3291 B2	3297 E3	6294 E2	SG06 E1
1254 D1	2286 A3	3285 A3	3292 B2	4201 A1	SG01 B2	SG07 E1
1255-A D1	2288 A3	3286 A3	3293 C2	4202 A1	SG02 A2	SG08 B1
1255-B C1	2292 B3	3287 A3	3294 C3	6291 E2	SG03 C1	



Personal notes:

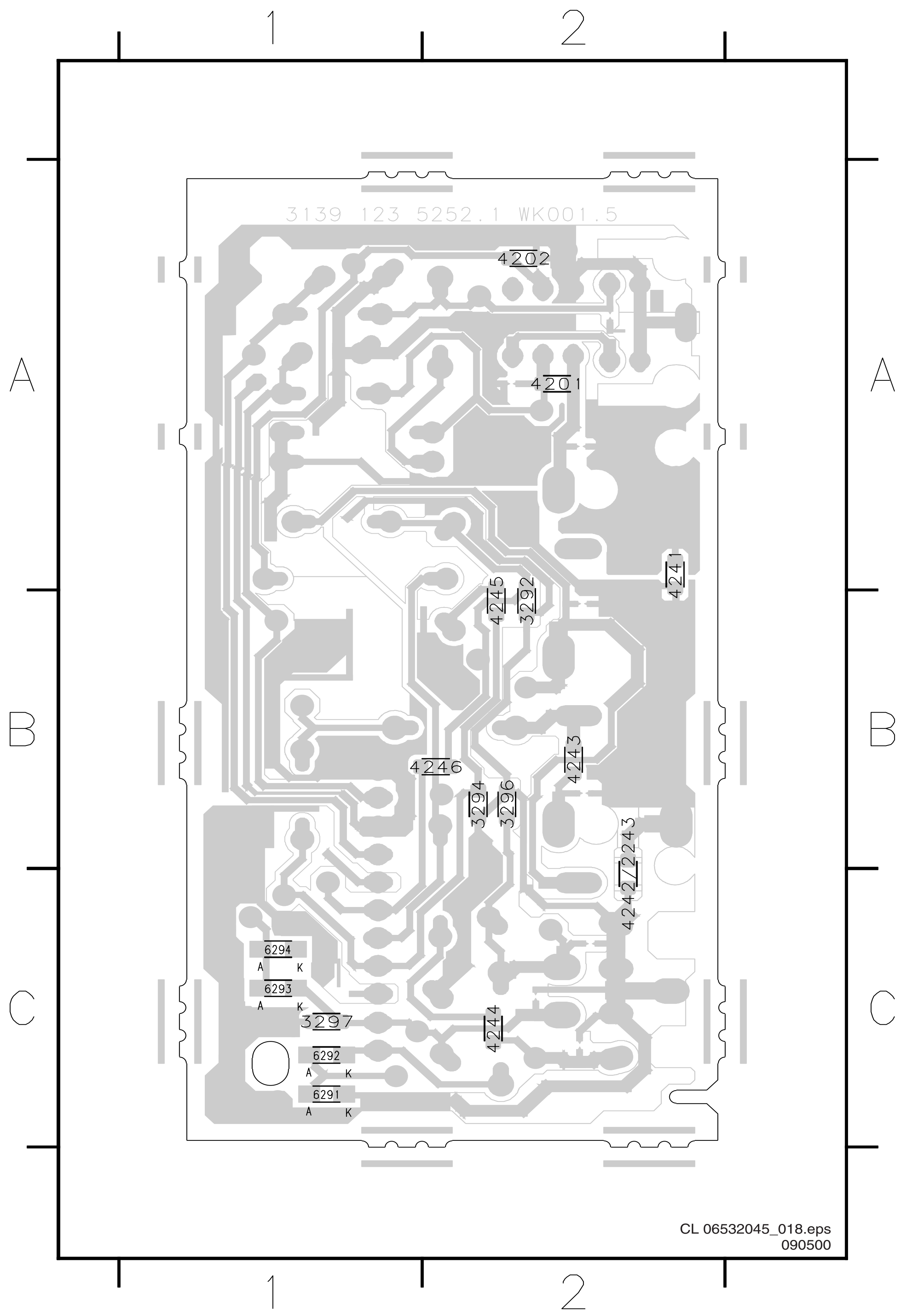
Layout Side I/O (component side)



Ref	Pos
0240	C2
1254	C1
1255	B1
1256	A1
2286	A2
2288	A2
2292	A1
2294	B2
2296	C1
2297	C1
3285	A2
3286	A2
3287	A2
3288	A2
3289	A2
3291	A2
3293	B2
3295	C1
9237	C1
9238	B1
9239	A1

CL 06532045_017.eps
200400

Layout Side I/O (copper side)

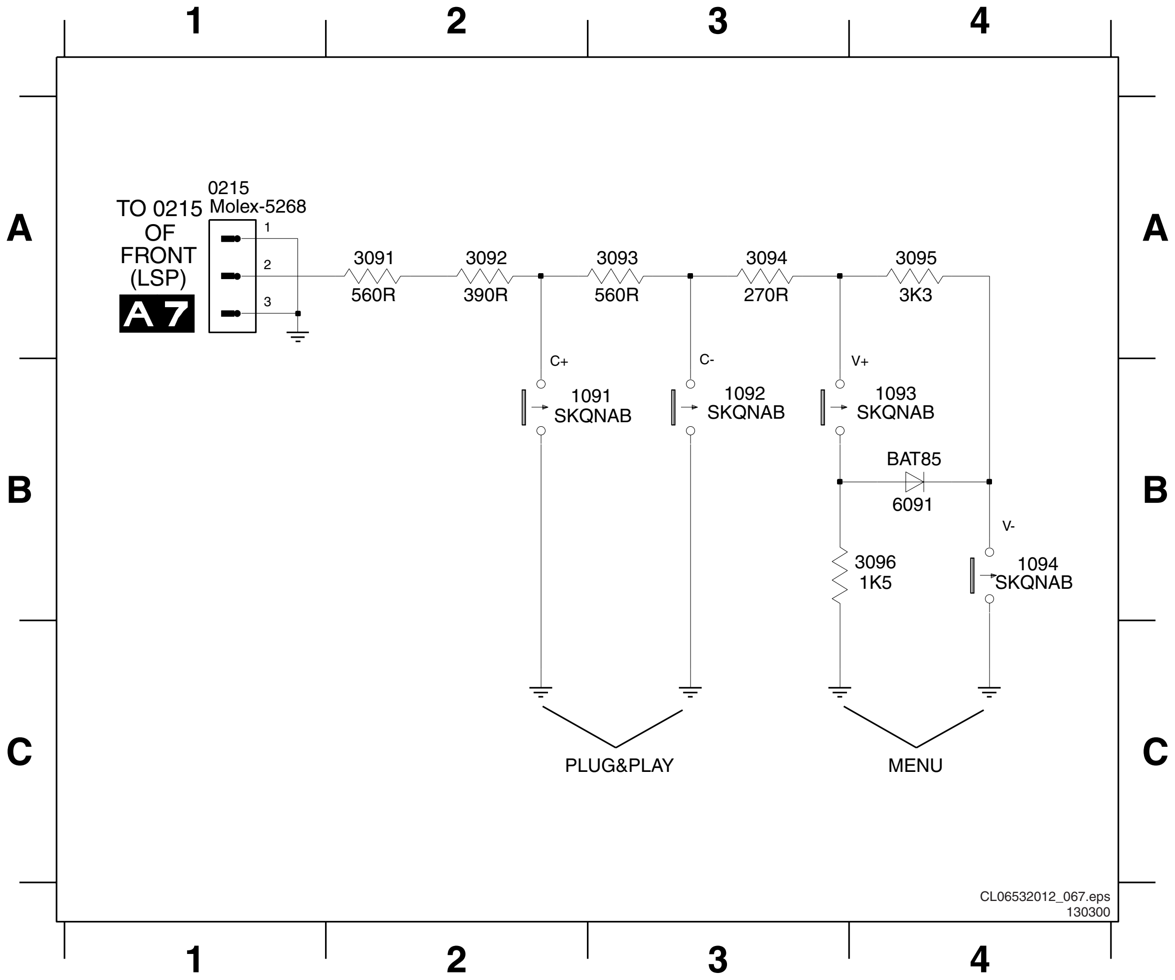


Ref	Pos
2243	C2
3292	B2
3294	B2
3296	B2
3297	C1
4201	A2
4202	A2
4241	A2
4242	C2
4243	B2
4244	C2
4245	B2
4246	B2
6291	C1
6292	C1
6293	C1
6294	C1

CL 06532045_018.eps
090500

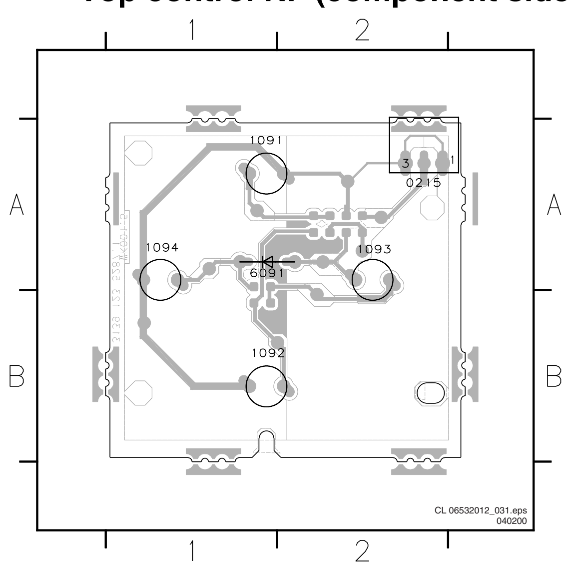
Top control

E TOP CONTROL PANEL



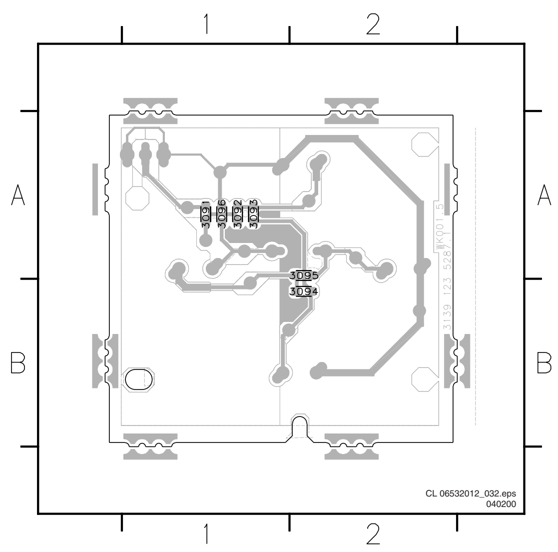
0215 A1
1091 B3
1092 B3
1093 B4
1094 B4
3091 A2
3092 A2
3093 A3
3094 A3
3095 A4
3096 B4
6091 B4

Top control RF (component side)



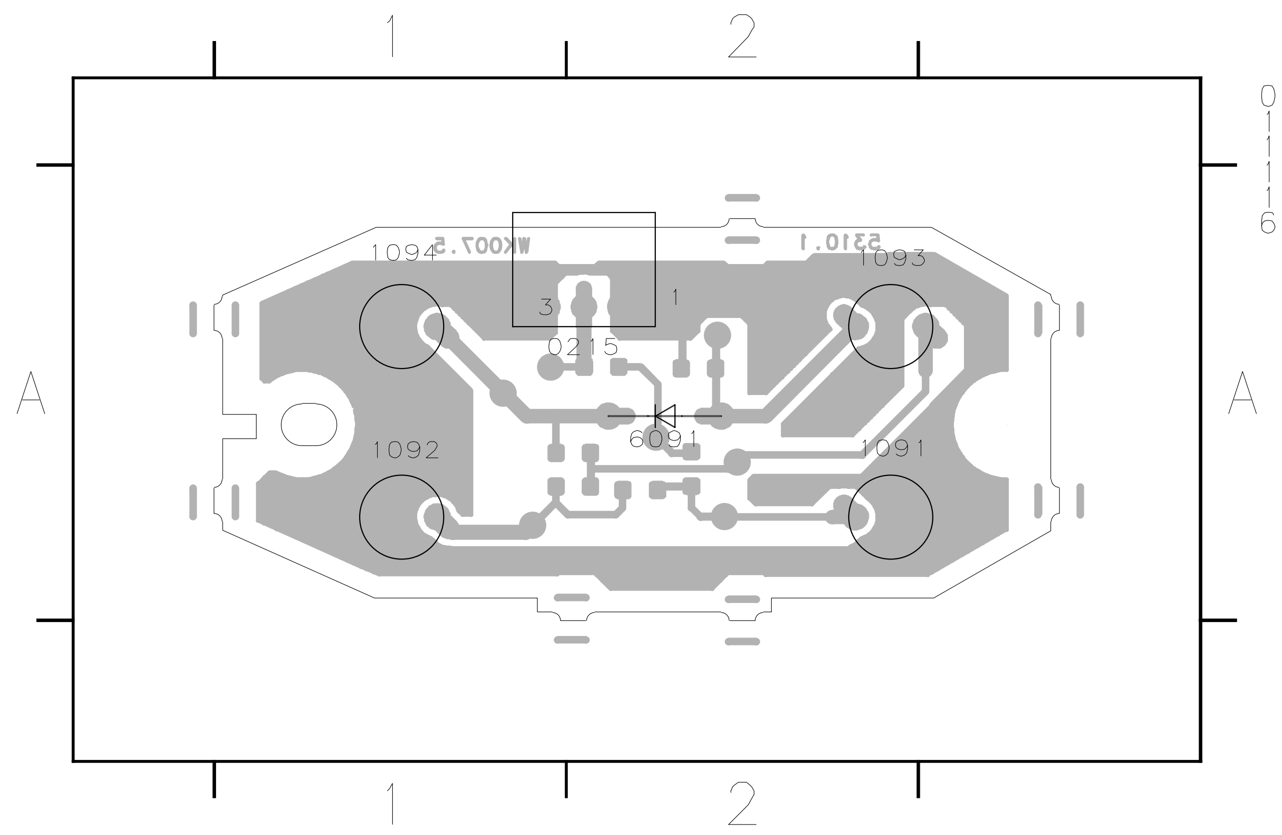
0215 A2
1091 A1
1092 B1
1093 A2
1094 A1
6091 A1

Top control RF (copper side)

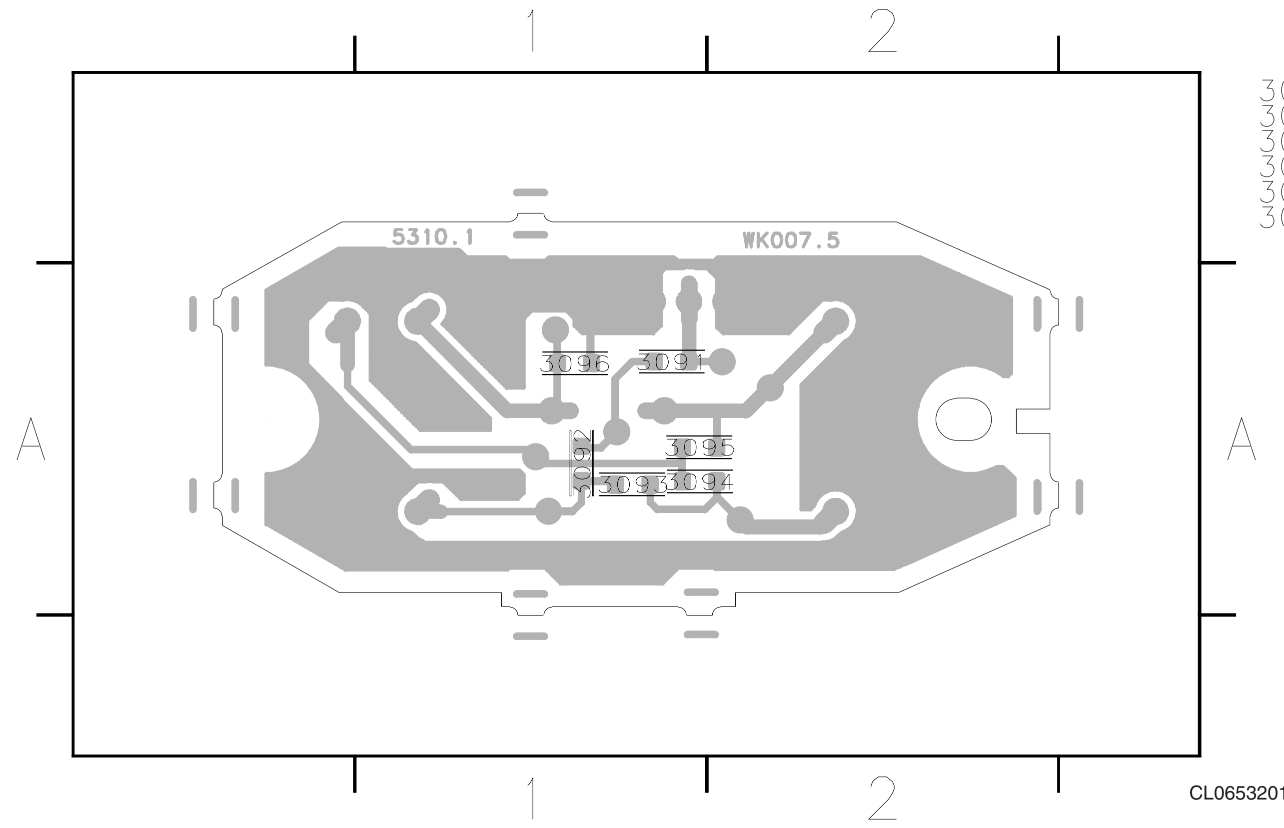


3091 A1
3092 A1
3093 A1
3094 B2
3095 A2
3096 A1

Layout Top control FSQ



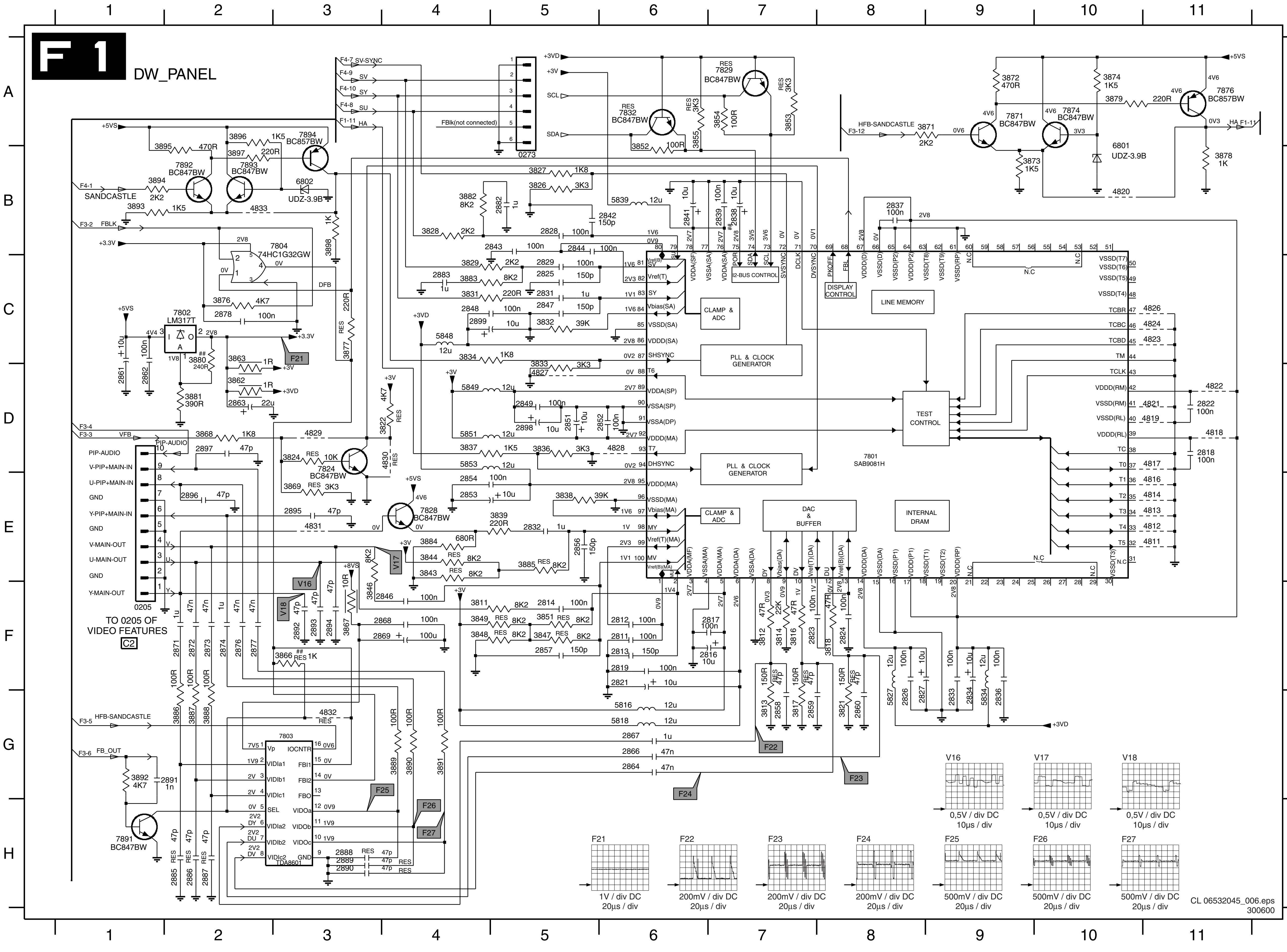
0215 A2
1091 A2
1092 A1
1093 A2
1094 A1
6091 A2



3091 A1
3092 A1
3093 A1
3094 A1
3095 A1
3096 A1

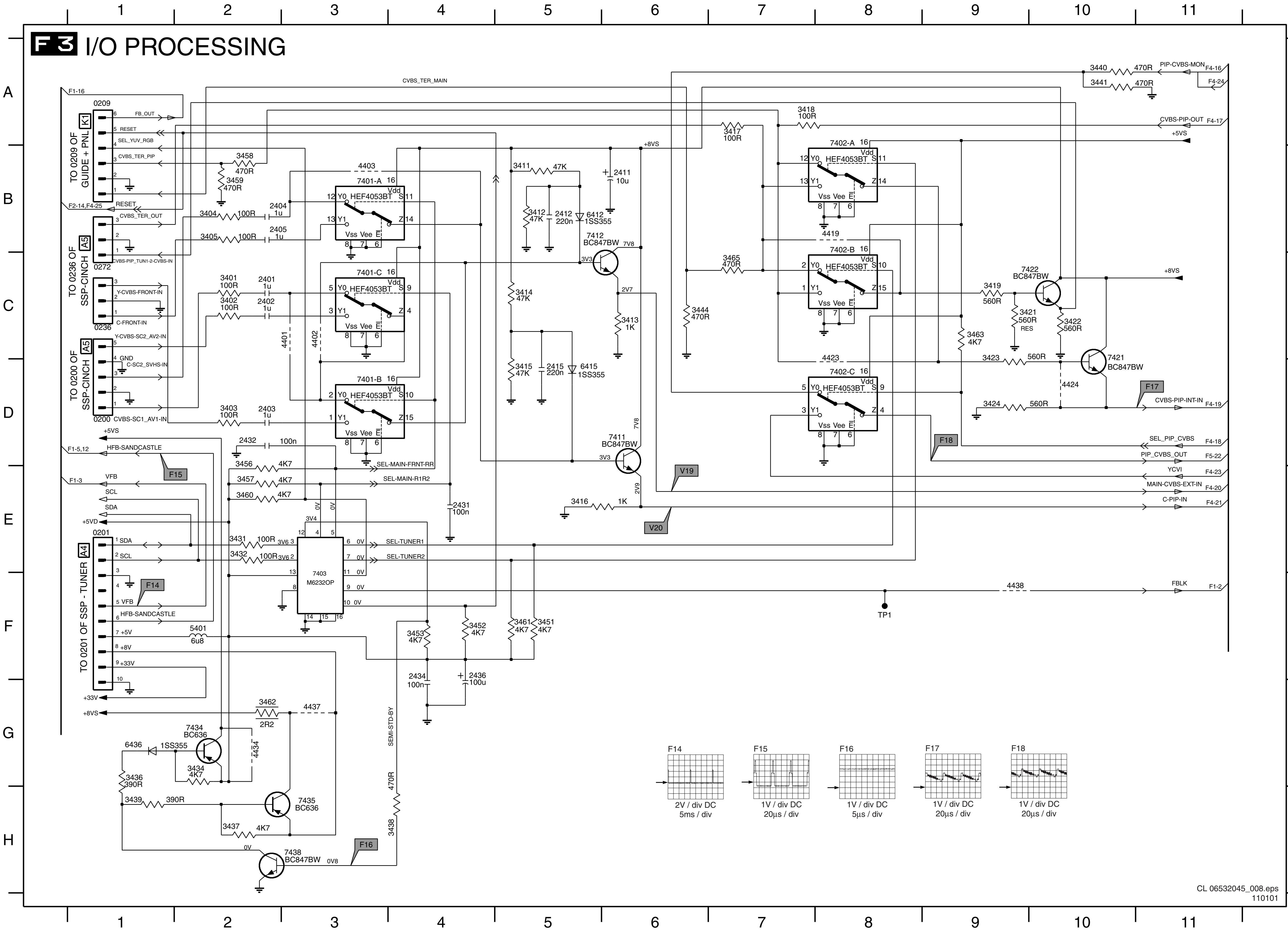
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100300

Double window



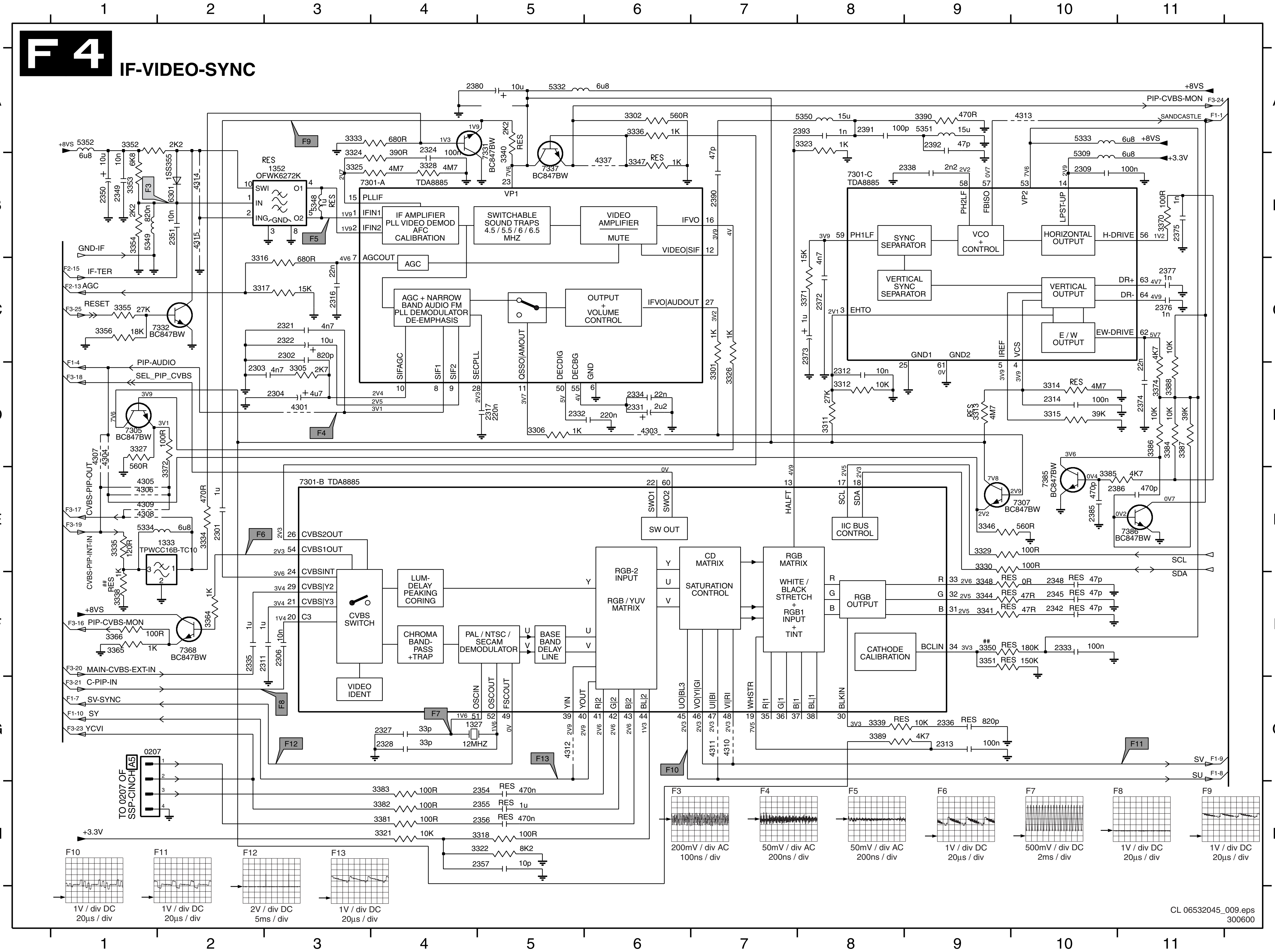
0205 F1
0273 B5
2811 F6
2812 F6
2813 F6
2814 F5
2816 F7
2817 F7
2818 D11
2819 F6
2821 F6
2822 D11
2823 F7
2824 F8
2825 C5
2826 G8
2827 G8
2828 B5
2829 C5
2831 C5
2832 E5
2833 G9
2834 G9
2836 G9
2837 B8
2838 B7
2839 B7
2841 B6
2842 B6
2843 B5
2844 B5
2846 F4
2847 C5
2848 C4
2849 D5
2851 D5
2852 D6
2853 E4
2854 E4
2856 E5
2857 F5
2858 G7
2859 G7
2860 G8
2861 D1
2862 D1
2863 D2
2864 G6
2866 G6
2867 G6
2868 F4
2869 F4
2871 F2
2872 F2
2873 F2
2874 F2
2876 F2
2877 F2
2878 C2
2882 B5
2883 C4
2885 H2
2886 H2
2887 H2
2888 H3
2889 H3
2890 H3
2891 G2
2892 F3
2893 F3
2894 F3
2895 E3
2896 E2
2897 D2
2898 D5
2899 C4
3811 F4
3812 F7
3813 G7
3814 F7
3816 F7
3817 G7
3818 F8
3821 G8
3822 D4
3824 D3
3826 B5
3827 B5
3828 B4
3829 C4
3831 C4
3832 C5
3833 D5
3834 C4
3836 D5
3837 D4
3838 E5
3839 E5
3843 E4
3844 E4
3846 F3
3847 F5
3848 F4
3849 F4
3851 F5
3852 B6
3853 A7
3854 A7
3855 A6
3862 D2
3863 C2
3866 F3
3867 F3
3868 D2
3869 E3
3871 A9
3872 A9
3873 B9
3874 A10
3876 C2
3877 C3
3878 B11
3879 A10
3880 C2
3881 D2
3882 B4
3883 C4
3884 E4
3885 E5
3886 G2
3887 G2
3888 G2
3889 G4
3890 G4
3891 G4
3892 G1
3893 B1
3894 B1
3895 B1
3896 A2
3897 B2
3898 B3
4811 E11
4812 E11
4813 E11
4814 E11
4816 E11
4817 D11
4818 D11
4819 D11
4820 B10
4821 D11
4822 D11
4823 C11
4824 C11
4826 C11
4827 D5
4828 D6
4829 D3
4830 D4
4831 E3
4832 G3
4833 B2
5816 G6
5818 G6
5827 G8
5834 G9
5839 B6
5848 C4
5849 D4
5851 D4
5853 D4
6801 A10
6802 B3
7801 D8
7802 C2
7803 G3
7804 B2
7824 D3
7828 E4
7829 A7
7832 A6
7871 A9
7874 A10
7876 A11
7891 H1
7892 B2
7893 B2
7894 A3

Double window I/O processing



TP1 F8
0200 D1
0201 E1
0209 A1
0236 C1
0272 C1
2401 C2
2402 C2
2403 D2
2404 B2
2405 B2
2411 B6
2412 B5
2415 D5
2431 E4
2432 D2
2434 F4
2436 F4
3401 C2
3402 C2
3403 D2
3404 B2
3405 B2
3411 B5
3412 B5
3413 C6
3414 C5
3415 D5
3416 E5
3417 A7
3418 A7
3419 C9
3421 C9
3422 C10
3423 D9
3424 D9
3431 E2
3432 E2
3434 G2
3436 G1
3437 H2
3438 H4
3439 H1
3440 A10
3441 A10
3444 C6
3451 F5
3452 F4
3453 F4
3456 E2
3457 E2
3458 B2
3459 B2
3460 E2
3461 F5
3462 G2
3463 C9
3465 C7
4401 C3
4402 C3
4403 B3
4419 B8
4423 D8
4424 D10
4434 G2
4437 G3
4438 F9
5401 F2
6412 B5
6415 D5
6436 G1
7401-A B3
7401-B D3
7401-C C3
7402-A A8
7402-B B8
7402-C D8
7403 F3
7411 D6
7412 B5
7421 D10
7422 C9
7434 G2
7435 H3
7438 H1

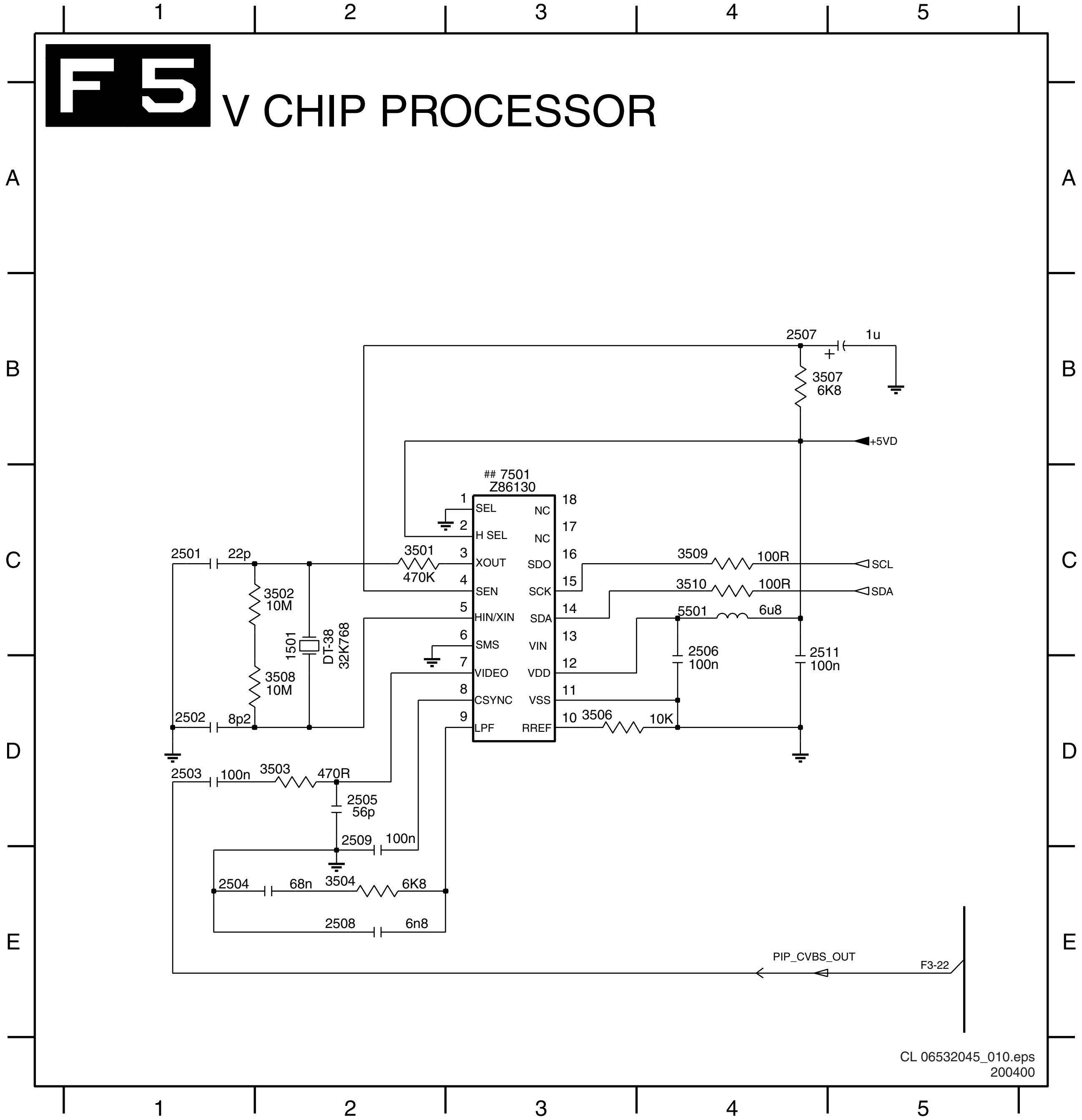
Double window IF video sync



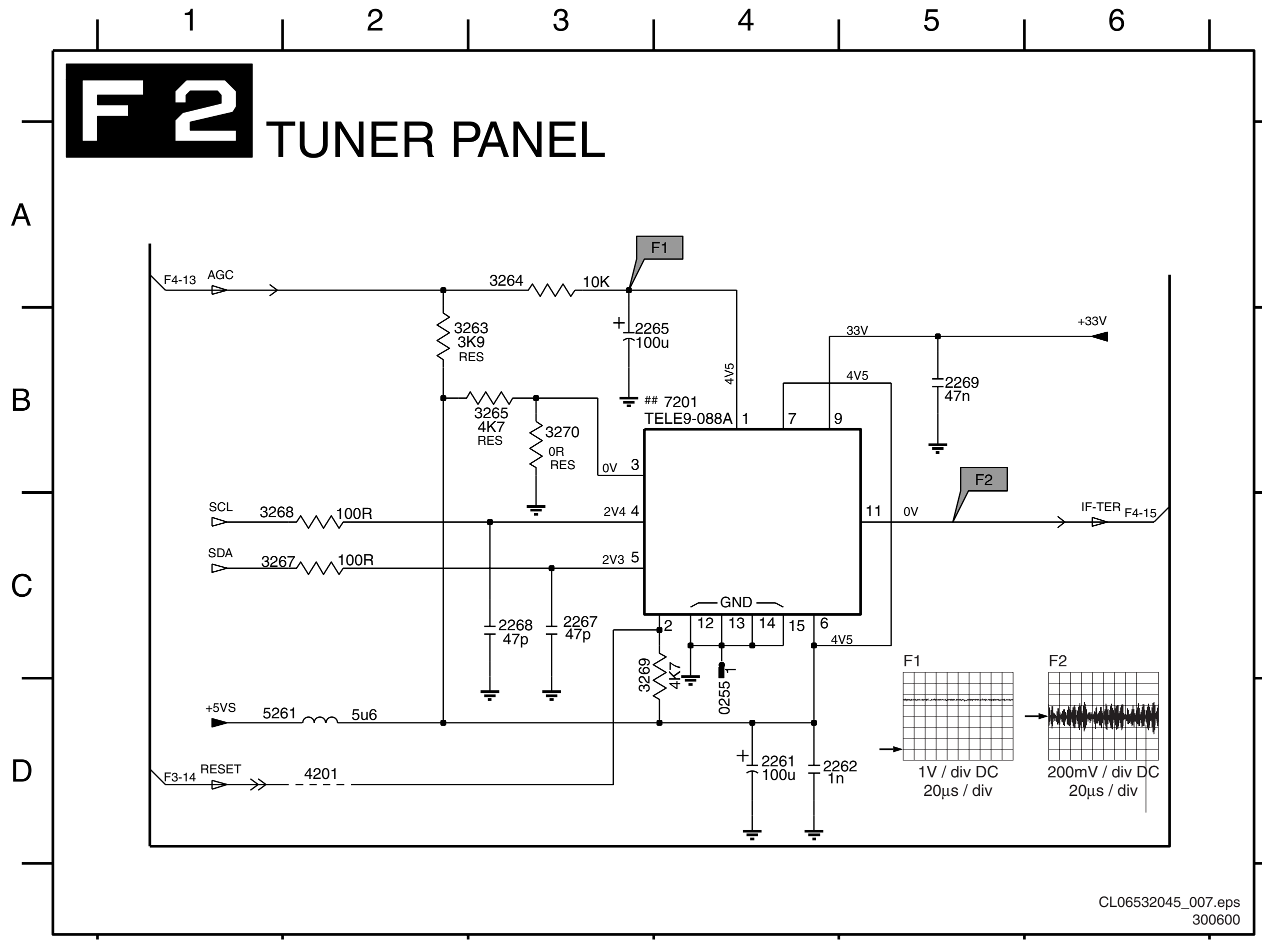
0207 G2
1327 G4
1333 E2
1352 B3
2301 E2
2302 C3
2303 D2
2304 D3
2306 F3
2309 B10
2311 F2
2312 D8
2313 G9
2314 D10
2316 C3
2317 D5
2321 C3
2322 C3
2324 A4
2327 G4
2328 G4
2331 D6
2332 D5
2333 F10
2334 D6
2335 F2
2336 G9
2338 B9
2342 F10
2345 F10
2348 F10
2349 B1
2350 B1
2351 B2
2354 H5
2355 H5
2356 H5
2357 H5
2372 C8
2373 C8
2374 D11
2375 B11
2376 C11
2377 C11
2380 A4
2385 E10
2386 E10
2390 B7
2391 A8
2392 A9
2393 A8
3301 D7
3302 A6
3305 D3
3306 D5
3311 D8
3312 D8
3313 D9
3314 D10
3315 D10
3316 C2
3317 C2
3318 H5
3321 H4
3322 H5
3323 A8
3324 A3
3325 B3
3326 D7
3327 D1
3328 B4
3329 E9
3330 E9
3333 A3
3334 E2
3335 E1
3336 A6
3338 F1
3339 G8
3340 B5
3341 F9
3344 F9
3346 E9
3347 B6
3348 F9
3350 F9
3351 F9
3352 A1
3353 B1
3354 B1
3355 C1
3356 C1
3364 F2
3365 F1
3366 F1
3370 B11
3371 C8
3372 E2
3374 D11
3381 H4
3382 H4
3383 H4
3384 D11
3385 E10
3386 D11
3387 D11
3388 D11
3389 G8
3390 A9
4301 D3
4303 D6
4304 D1
4305 E1
4306 E1
4307 D1
4308 E1
4309 E1
4310 G7
4311 G7
4312 G5
4313 A10
4314 B2
4315 B2
4337 B6
5309 B10
5332 A5
5333 A10
5334 E1
5348 B3
5349 B1
5350 A8
5351 A9
5352 A1
6301 B2
7301-A B3
7301-B E3
7301-C B8
7305 D1
7307 E10
7331 B5
7332 C1
7337 B5
7368 F2
7385 E10
7386 E11

Double window V-chip processor

1501 C2	2502 D1	2504 E1	2506 C4	2508 E2	2511 C4	3502 C2	3504 E2	3507 B4	3509 C4	5501 C4
2501 C1	2503 D1	2505 D2	2507 B4	2509 D2	3501 C2	3503 D2	3506 D3	3508 D2	3510 C4	7501 C3

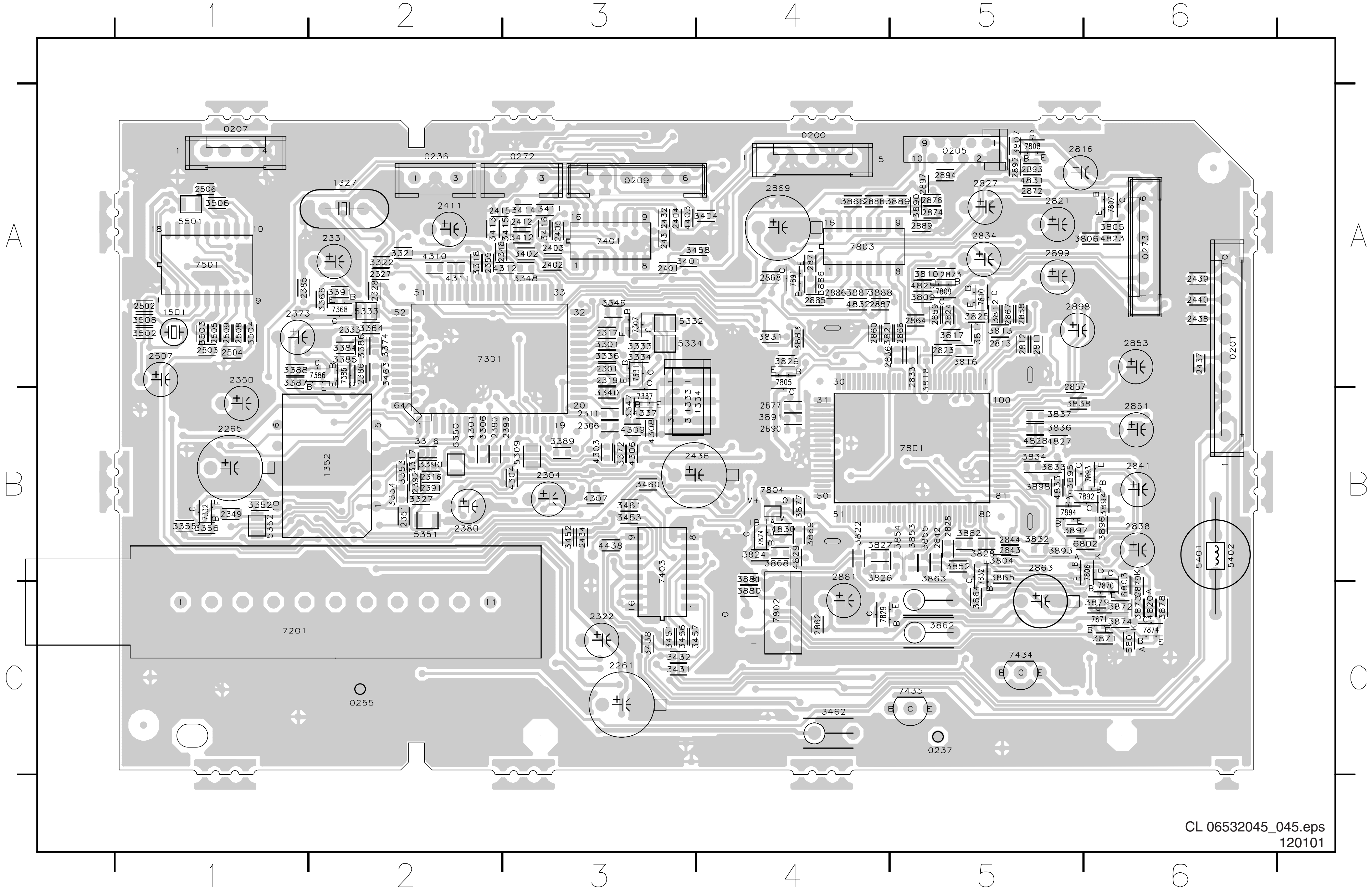


Double window tuner panel



Layout Double window (component side)

0200 A4
0201 A6
0205 A5
0207 A1
0209 A3
0236 A2
0237 C5
0255 C2
0272 A3
0273 A6
1327 A2
1333 B3
1334 B4
1352 B2
1501 A1
2261 C3
2265 B1
2301 A3
2304 B3
2306 B3
2311 B3
2316 B2
2317 A3
2319 A3
2322 C3
2327 A2
2328 A2
2331 A2
2333 A2
2348 A2
2349 B1
2350 A1
2351 B2
2355 A2
2373 A1
2380 B2
2385 A1
2386 A2
2390 B2
2391 B2
2392 B2
2393 B3
2401 A3
2402 A3
2403 A3
2404 A3
2405 A3
2411 A2
2412 A3
2415 A2
2431 A3
2432 A3
2434 B3
2436 B4
2437 A6
2438 A6
2439 A6
2440 A6
2502 A1
2503 A1
2504 A1
2505 A1
2506 A1
2507 A1
2508 A1
2509 A1
2811 A5
2812 A5
2813 A5
2816 A5
2821 A5
2823 A5
2824 A5
2827 A5
2828 B5
2833 A5
2834 A5
2836 A4
2838 B6
2841 B6
2842 B5
2843 B5
2844 B5
2851 B6
2853 A6
2857 A5
2858 A5
2859 A5
2860 A4
2861 B4
2862 C4
2863 B5
2864 A5
2866 A5
2867 A5
2868 A4
2869 A4
2871 A4
2872 A5
2873 A5
2874 A5
2876 A5
2877 B4
2879 C6
2885 A4
2886 A4
2887 A4
2888 A4
2889 A5
2890 B4
2892 A5
2893 A5
2894 A5
2897 A5
2898 A5
2899 A5
3301 A3
3306 B2
3316 B2
3317 B2
3318 A2
3321 A2
3322 A2
3327 B2
3333 A3
3334 A3
3336 A3
3340 B3
3346 A3
3347 B3
3348 A3
3352 B1
3353 B2
3354 B2
3355 B1
3356 B1
3364 A2
3366 A2
3372 B3
3374 A2
3384 A2
3385 A2
3386 A2
3387 A1
3388 A1
3389 B3
3390 B2
3391 A2
3401 A3
3402 A3
3404 A4
3411 A3
3412 A3
3413 A2
3414 A3
3415 A3
3416 A3
3431 C3
3432 C3
3438 C3
3451 C3
3452 B3
3453 B3
3456 C3
3457 C3
3458 A4
3460 B3
3461 B3
3462 C4
3463 A2
3502 A1
3503 A1
3504 A1
3506 A1
3508 A1
3804 B5
3805 A6
3806 A6
3807 A5
3809 A5
3810 A5
3812 A5
3813 A5
3814 A5
3816 A5
3817 A5
3818 A5
3821 A4
3822 B4
3824 B4
3825 A5
3826 B4
3827 B4
3828 B5
3829 A4
3831 A4
3832 B5
3833 B5
3834 B5
3836 B5
3837 B5
3838 B5
3852 B5
3853 B5
3854 B5
3855 B5
3862 C5
3863 B5
3864 C5
3865 B5
3866 A4
3868 B4
3869 B4
3871 C6
3872 C6
3873 C6
3874 C6
3877 B4
3878 C6
3879 C6
3880 C4
3881 B4
3882 B5
3883 A4
3886 A4
3887 A4
3888 A4
3889 A5
3890 A5
3891 B4
3893 B5
3894 B6
3895 B5
3896 B6
3897 B5
3898 B5
4301 B2
4303 B3
4304 B3
4306 B3
4307 B3
4308 B3
4309 B3
4310 A2
4311 A2
4312 A3
4337 B3
4403 A3
4438 B3
4820 C6
4823 A6
4825 A5
4827 B5
4828 B5
4829 B4
4830 B4
4831 A5
4832 A4
4833 B5
5309 B3
5332 A3
5333 A2
5334 A3
5350 B2
5351 B2
5352 B1
5401 B6
5402 B6
5501 A1
6801 C6
6802 B6
6803 C6
7201 C1
7301 A2
7307 A3
7331 A3
7332 B1
7337 B3
7368 A2
7385 A2
7386 A2
7401 A3
7403 B3
7434 C5
7435 C5
7501 A1
7801 B5
7802 C4
7803 A4
7804 B4
7805 A4
7806 B6
7807 A6
7808 A5
7809 A5
7810 A5
7824 B4
7829 C4
7832 B5
7871 C6
7874 C6
7876 C6
7891 A4
7892 B6
7893 B6
7894 B5



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120101

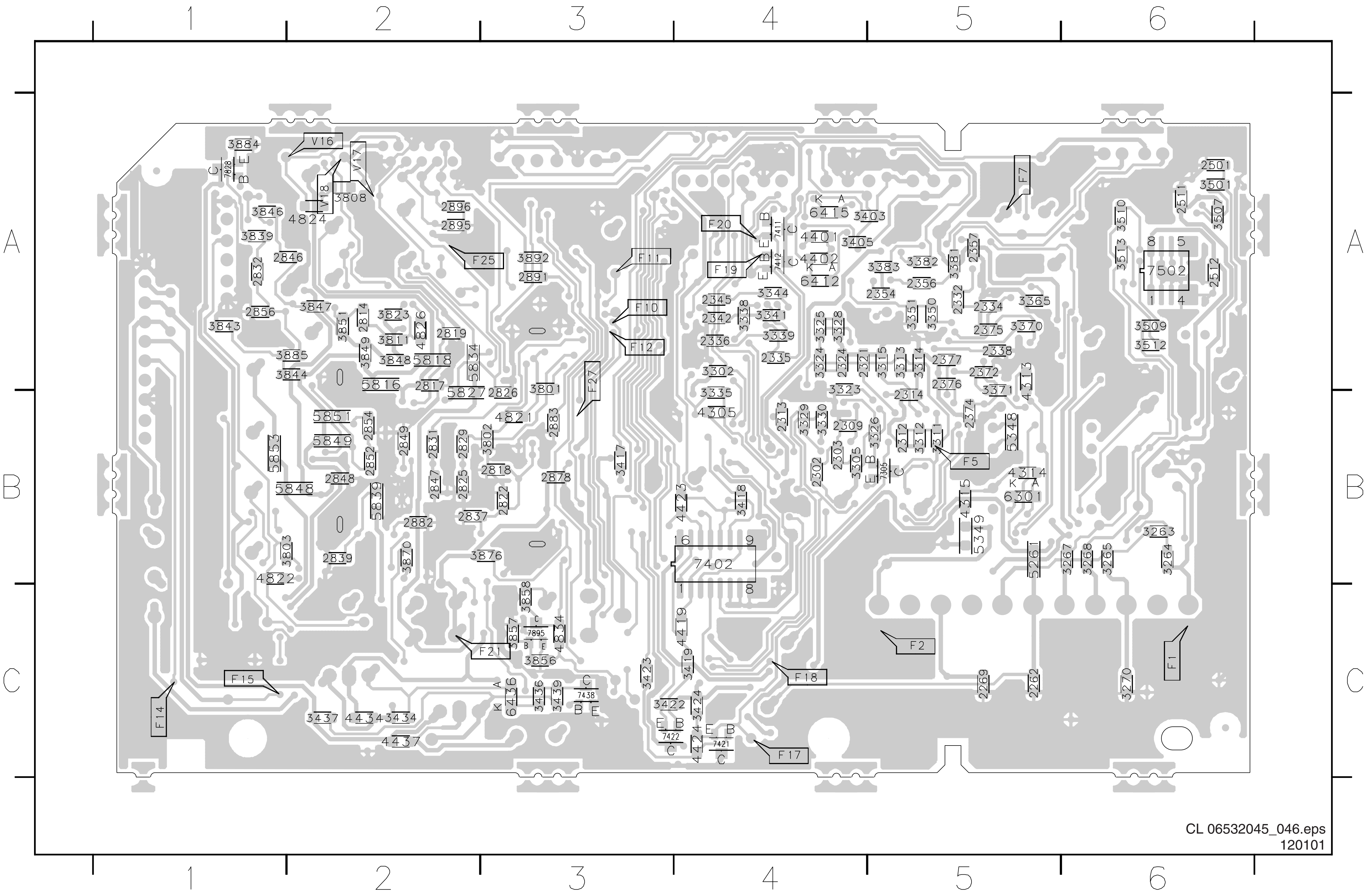
Diversity table diagram F2, F3 & F4

Item	PAL/MULTI	NTSC
1333	FIL 5.8/6.5MHZ	
1352		45.75MHZ OFWM1962M
1352	38.9MHZ OFWK7260M	
2321	3N9 50V	
2321		4N7 50V
2349	10N 50V	
2350	10U 50V	
2392	18P 50V	
2392		47P 50V
2393	100P 50V	
2393		1N 25V
3335	120R 0805	
3352	2K2 0603	
3353	6K8 0603	
3354	2K2 0603	
3355	27K 0603	
3356	18K 0603	
3364		1K 0603
3365		1K 0805
3372		100R 0603
3372	JUMPER	
3417		100R 0805
3418		100R 0805
3419		560R 0805
3422		560R 0805
3423		560R 0805
3424		560R 0805
3451		4K7 0603
3461		4K7 0603
4305	JUMPER	
4308		JUMPER
4309		JUMPER
4314	JUMPER	
4315		JUMPER
5334	6U8	
5352	6U8	
6301	1SS356	
7201	TEDE9X700A	
7201		TEDH9X700A
7301		TDA8887H/N1
7301	TDA8889H/N1	
7332	BC847BW	
7368		BC847BW

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051200

Layout Double window (copper side)

2262 C5	2338 A5	2814 A2	2848 B2	3267 B6	3328 A4	3382 A5	3501 A6	3844 A2	4305 B4	4826 A2	6301 B5
2269 C5	2342 A4	2817 A2	2849 B2	3268 B6	3329 B4	3383 A5	3507 A6	3846 A1	4313 A5	4834 C3	6412 A4
2302 B4	2345 A4	2818 B3	2852 B2	3270 C6	3330 B4	3403 A5	3509 A6	3847 A2	4314 B5	5261 B5	6415 A4
2303 B4	2354 A5	2819 A2	2854 B2	3302 A4	3335 B4	3405 A4	3510 A6	3848 A2	4315 B5	5348 B5	6436 C3
2309 B4	2356 A5	2822 B3	2856 A1	3305 B4	3338 A4	3417 B3	3512 A6	3849 A2	4401 A4	5349 B5	7305 B5
2312 B5	2357 A5	2825 B2	2878 B3	3311 B5	3339 A4	3418 B4	3513 A6	3851 A2	4402 A4	5816 A2	7402 B4
2313 B4	2372 A5	2826 B3	2882 B2	3312 B5	3341 A4	3419 C4	3801 A3	3856 C3	4419 C4	5818 A2	7411 A4
2314 B5	2374 B5	2829 B2	2883 B3	3313 A5	3344 A4	3422 C3	3802 B3	3857 C3	4423 B4	5827 B2	7412 A4
2321 A4	2375 A5	2831 B2	2891 A3	3314 A5	3350 A5	3423 C3	3803 B2	3858 C3	4424 C4	5834 A2	7421 C4
2324 A4	2376 A5	2832 A1	2895 A2	3315 A5	3351 A5	3424 C4	3808 A2	3870 B2	4434 C2	5839 B2	7422 C3
2332 A5	2377 A5	2837 B2	2896 A2	3323 A4	3365 A5	3434 C2	3811 A2	3876 B3	4437 C2	5848 B2	7438 C3
2334 A5	2501 A6	2839 B2	3263 B6	3324 A4	3370 A5	3436 C3	3823 A2	3884 A1	4821 B3	5849 B2	7502 A6
2335 A4	2511 A6	2846 A2	3264 B6	3325 A4	3371 B5	3437 C2	3839 A1	3885 A2	4822 B1	5851 B2	7828 A1
2336 A4	2512 A6	2847 B2	3265 B6	3326 B5	3381 A5	3439 C3	3843 A1	3892 A3	4824 A2	5853 B1	7895 C3

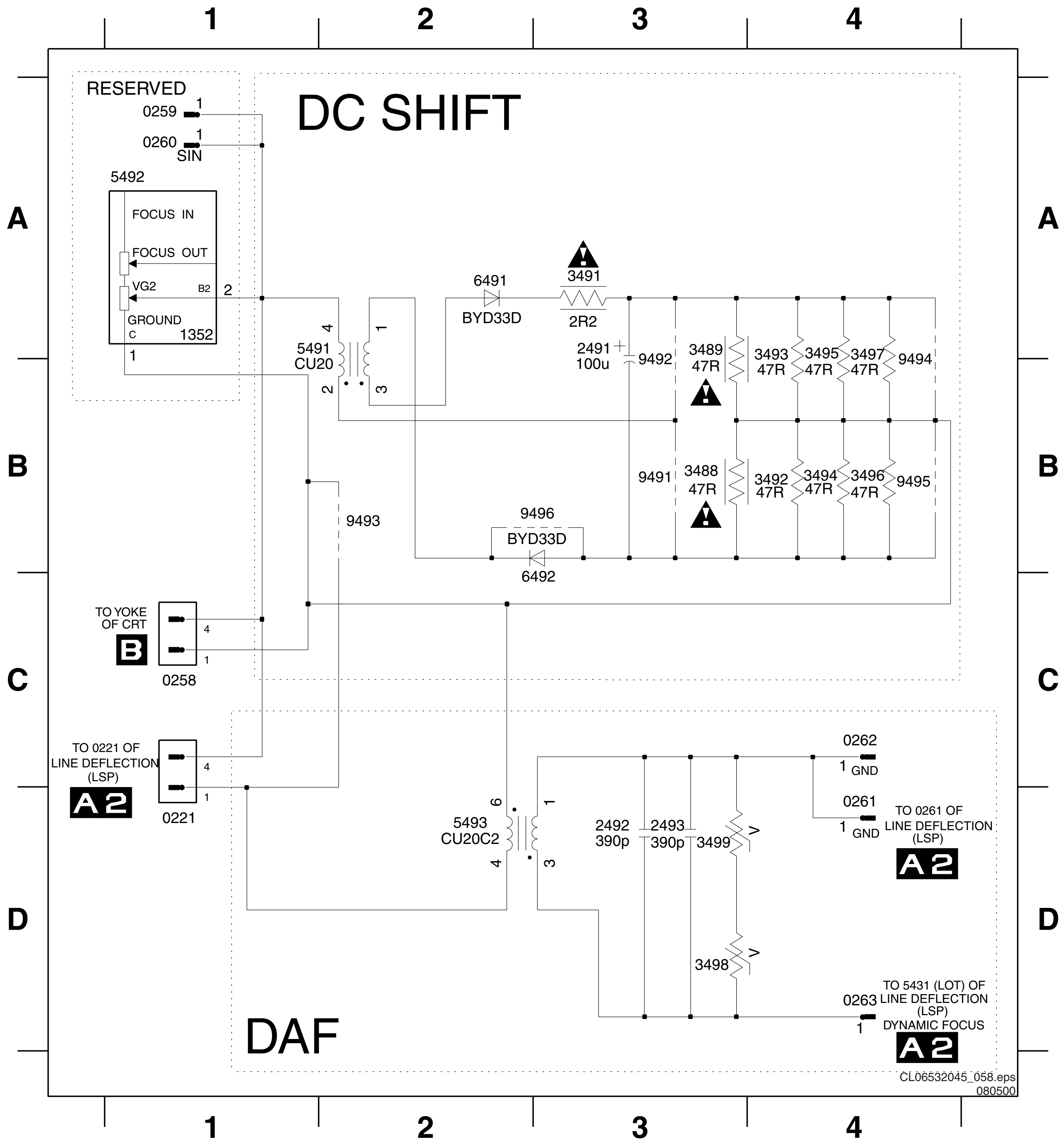


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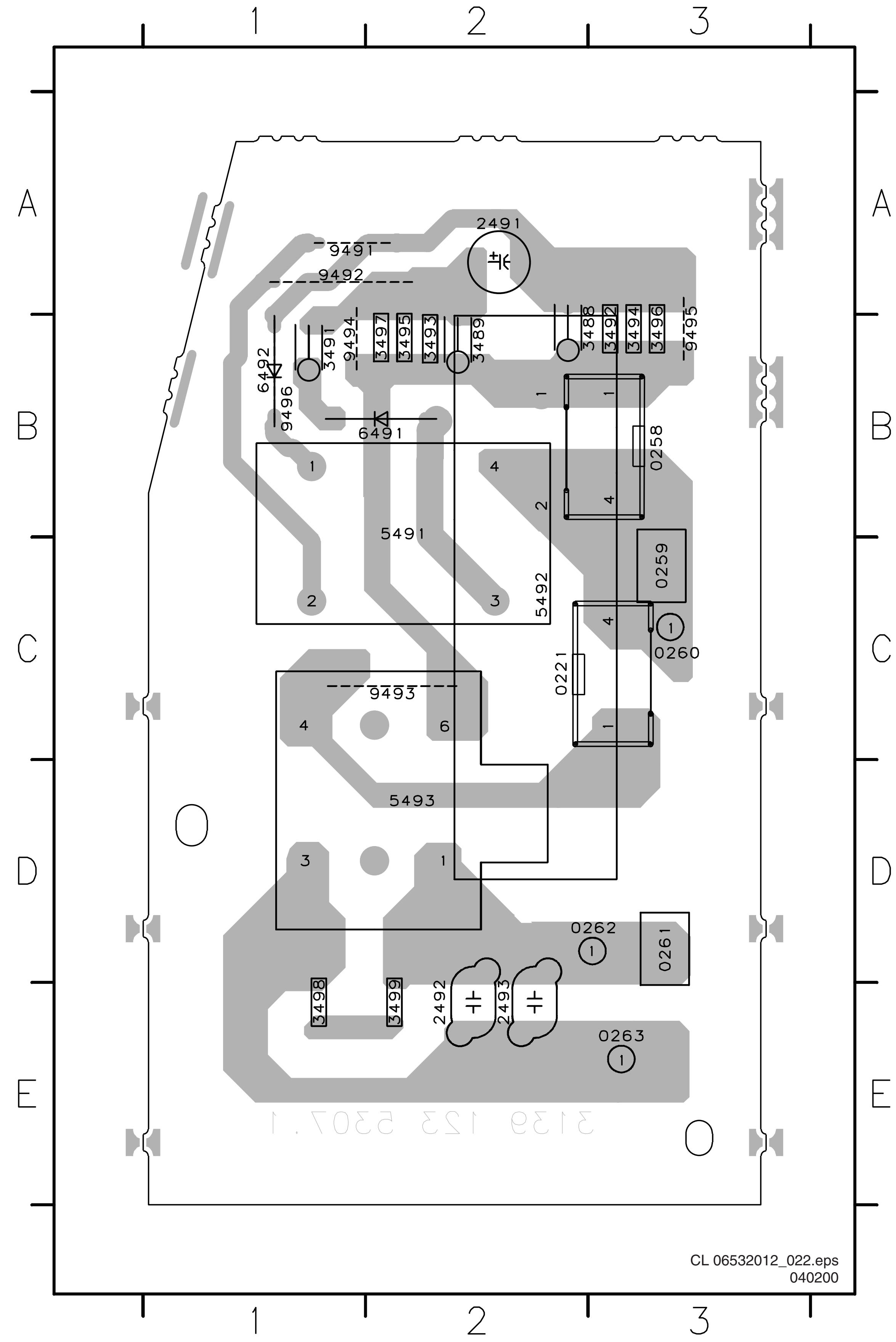
DC Shift / DAF panel

G DC SHIFT & DAF PANEL

0221 D1	0261 D4	2492 D3	3491 A3	3495 B4	3499 D3	6491 A2	9493 B2
0258 C1	0262 C4	2493 D3	3492 B4	3496 B4	5491 A2	6492 B3	9494 A4
0259 A1	0263 D4	3488 B3	3493 B4	3497 B4	5492 A1	9491 B3	9495 B4
0260 A1	2491 B3	3489 B4	3494 B4	3498 D3	5493 D2	9492 A3	9496 B3



Layout DC Shift / DAF panel

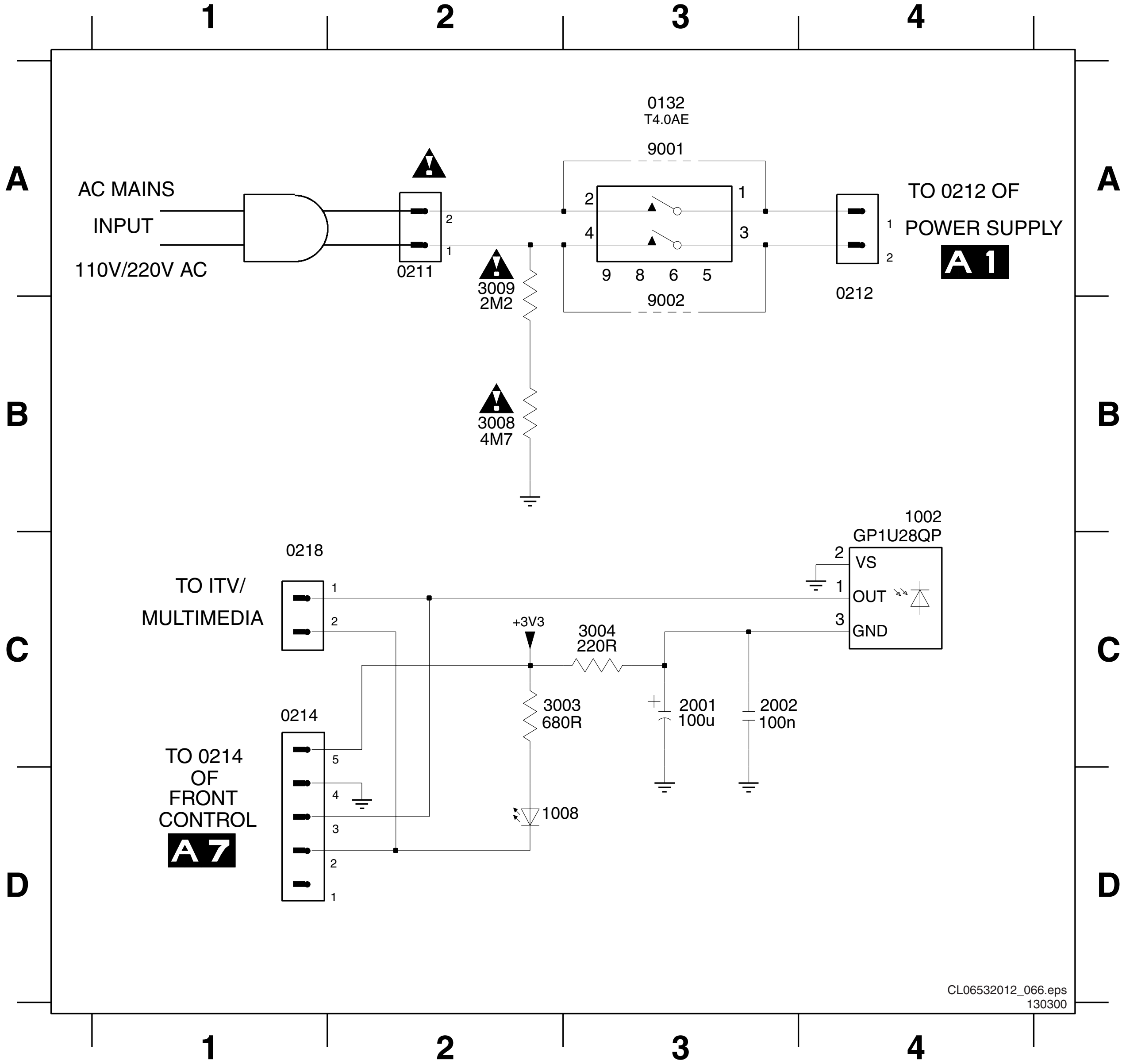


0221	C2
0258	B3
0259	C3
0260	C3
0261	D3
0262	D3
0263	E3
2491	A2
2492	E2
2493	E2
3488	B3
3489	B2
3491	B1
3492	B3
3493	B2
3494	B3
3495	B2
3496	B3
3497	B2
3498	E1
3499	E2
5491	B2
5492	C2
5493	D2
6491	B2
6492	B1
9491	A1
9492	A1
9493	C2
9494	B1
9495	B3
9496	B1

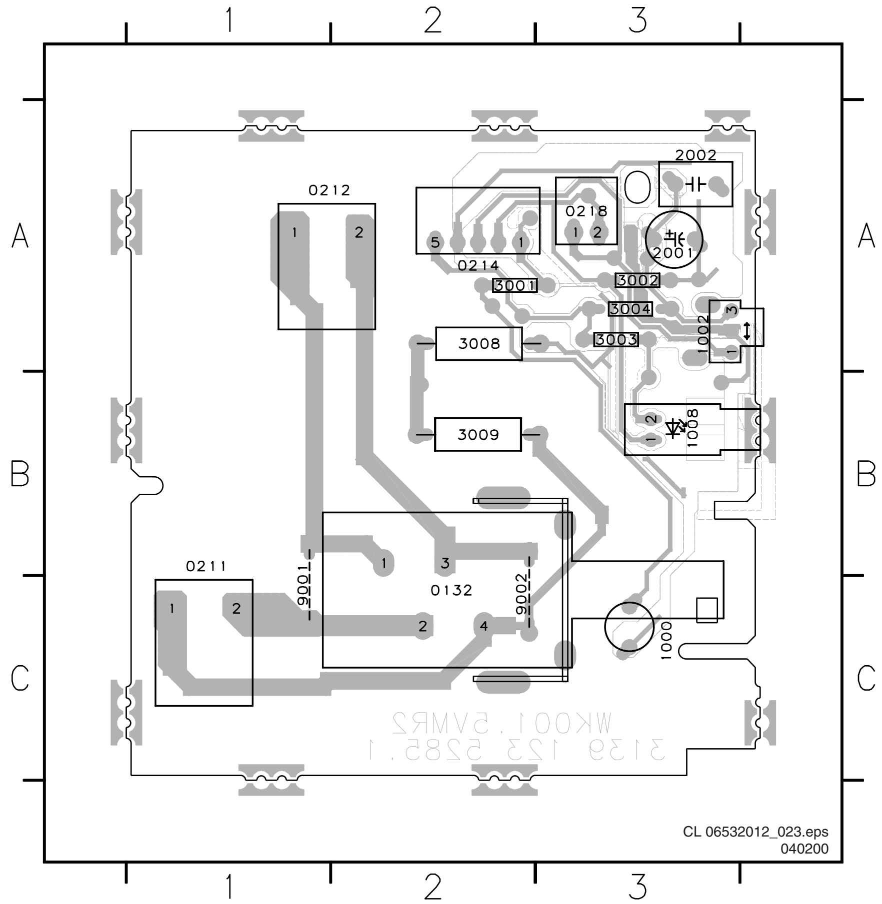
Front interface

J FRONT INTERFACE PANEL

0132 A3	0214 C1	1002 B4	2002 C3	3003 C2	3009 A2
0211 A2	0218 C1	1008 D2	3001 D2	3004 C3	9001 A3
0212 B4	1000 D2	2001 C3	3002 D3	3008 B3	9002 B3

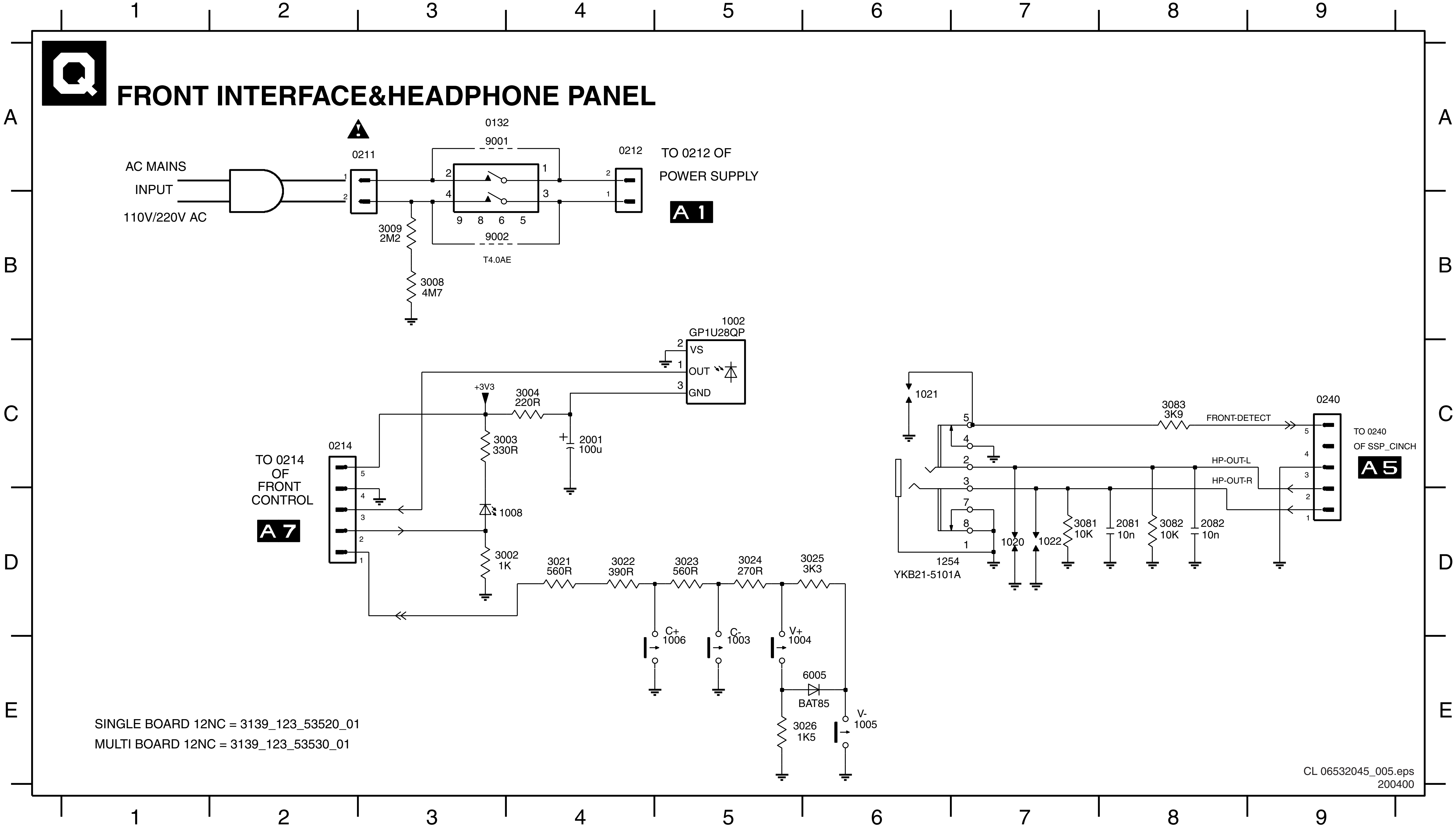


Layout Front interface (component side)



0132	C2
0211	B1
0212	A1
0214	A2
0218	A3
1000	C3
1002	A3
1008	B3
2001	A3
2002	A3
3001	A2
3002	A3
3003	A3
3004	A3
3008	A2
3009	B2
9001	C1
9002	C2

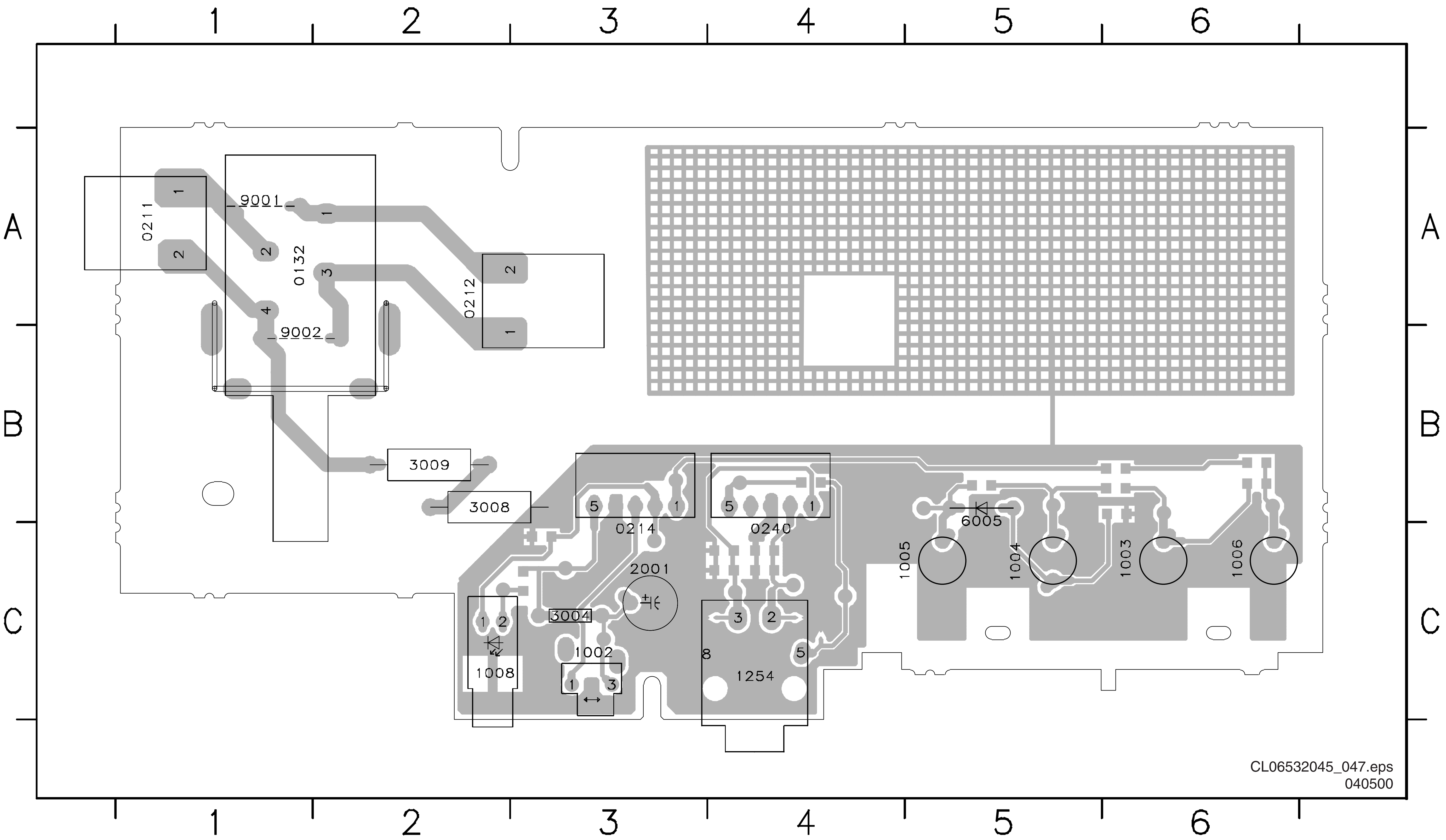
Front interface & Headphone panel



0132 A3
0211 A2
0212 A4
0214 C2
0240 C9
1002 B5
1003 D5
1004 D5
1005 E6
1006 D5
1008 D3
1020 D7
1021 C7
1022 D7
1024 E6
1254 D7
2001 C4
2081 D8
2082 D9
3002 D4
3003 C3
3004 C4
3008 B3
3009 A3
3021 D4
3022 D4
3023 D5
3024 D5
3025 D6
3026 E6
3081 D8
3082 D8
3083 C8
6005 E6
9001 A3
9002 B3

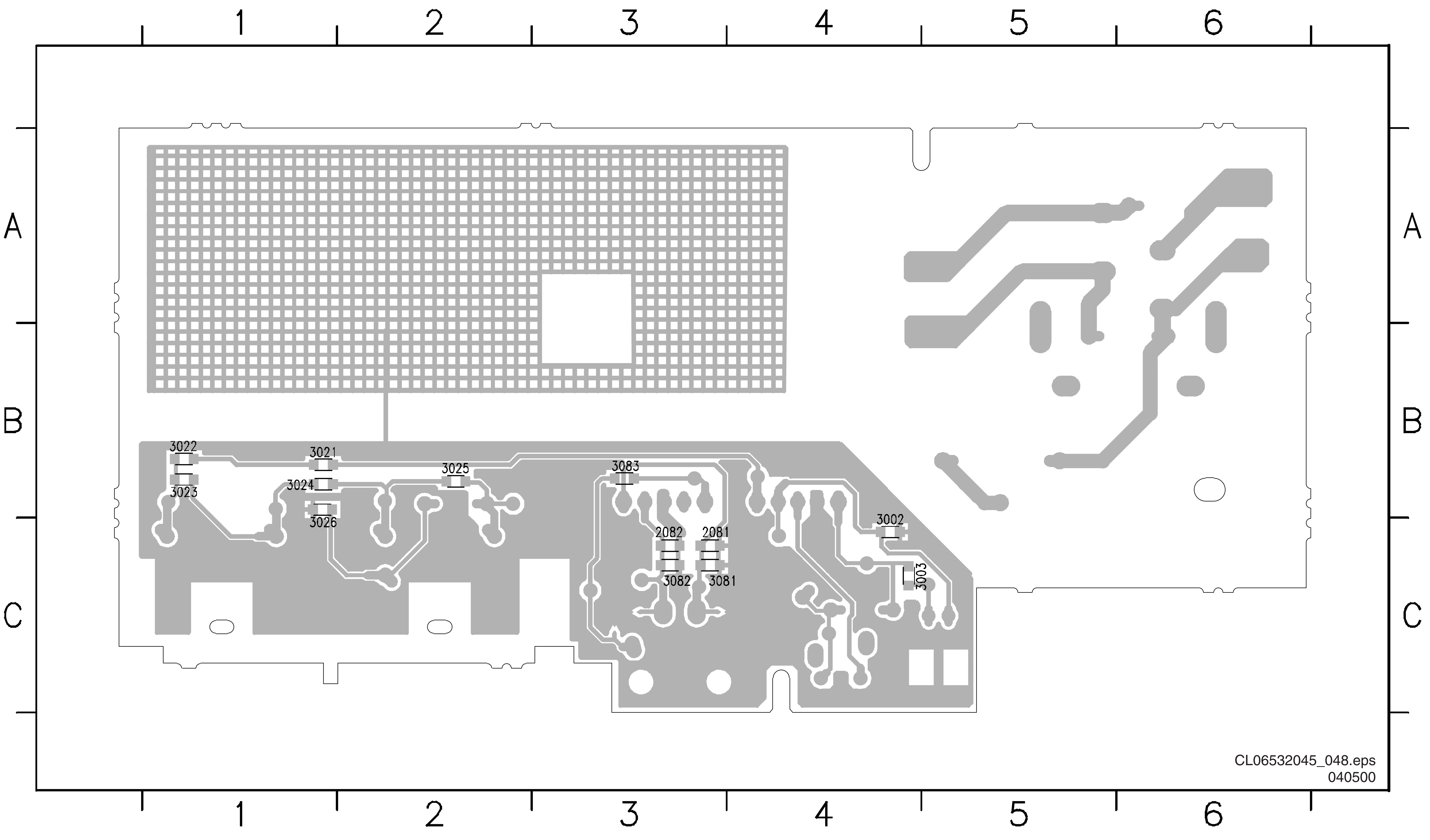
Layout Front interface & Headphone (component side)

0132 A1	0212 A2	0240 C4	1003 C6	1005 C4	1008 C2	2001 C3	3008 B2	6005 B5	9002 B1
0211 A1	0214 C3	1002 C3	1004 C5	1006 C6	1254 C4	3004 C3	3009 B2	9001 A1	



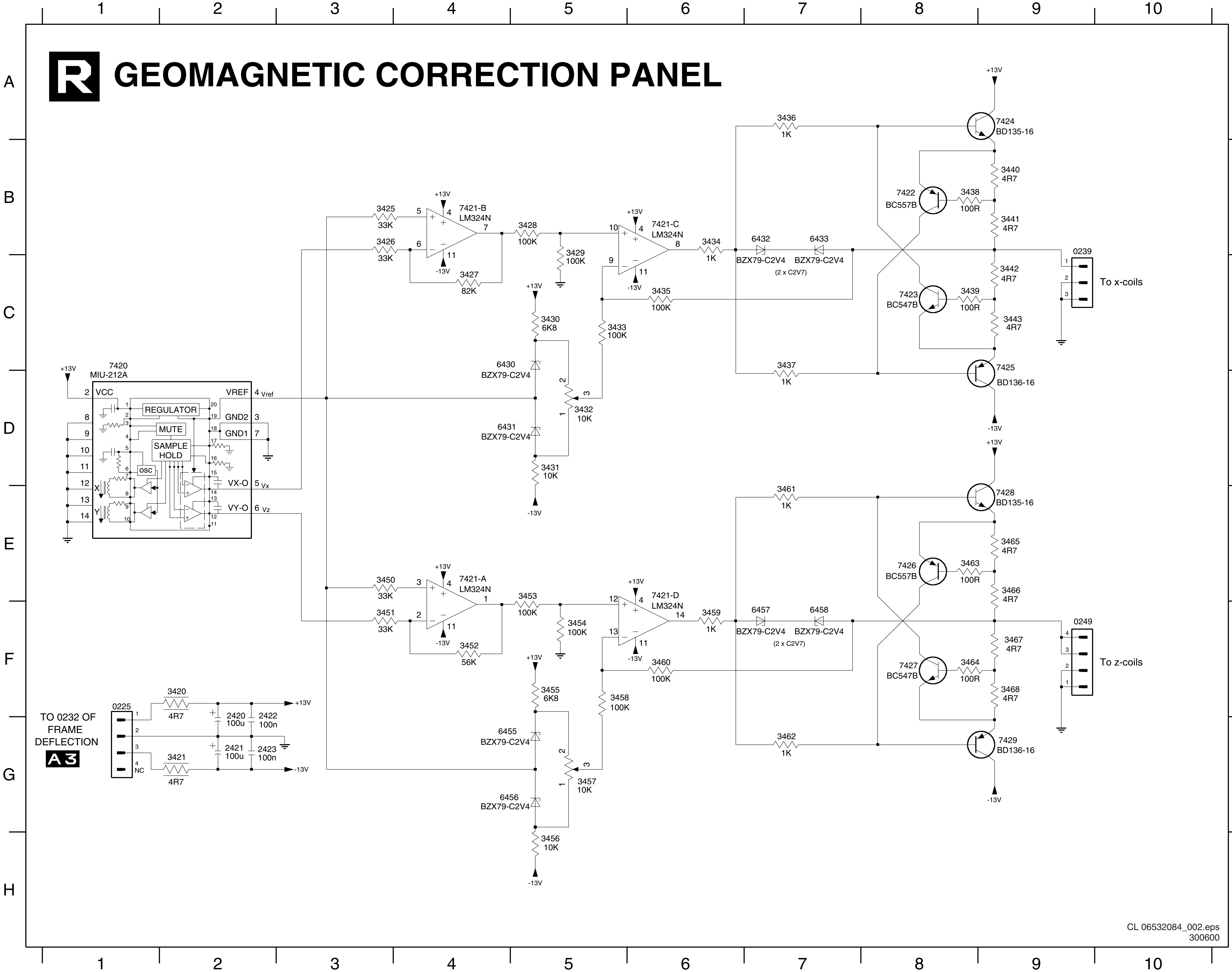
Layout Front interface & Headphone (copper side)

2081 C3 2082 C3 3002 C4 3003 C4 3021 B1 3022 B1 3023 B1 3024 B1 3025 B2 3026 C1 3081 C3 3082 C3 3083 B3



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Geomagnetic correction panel



0225 F1
0239 B9
0249 F9
2420 F2
2421 G2
2422 G2
2423 G2
3420 F2
3421 G2
3425 B3
3426 B3
3427 C4
3428 B5
3429 B5
3430 C5
3431 D5
3432 D5
3433 C5
3434 B6
3435 C6
3436 A7
3437 C7
3438 B8
3439 C8
3440 B9
3441 B9
3442 C9
3443 C9
3450 E3
3451 F3
3452 F4
3453 E5
3454 F5
3455 F5
3456 H5
3457 G5
3458 F5
3459 F6
3460 F6
3461 E7
3462 G7
3463 E8
3464 F8
3465 E9
3466 E9
3467 F9
3468 F9
6430 C4
6431 D4
6432 B7
6433 B7
6455 G4
6456 G4
6457 F7
6458 F7
7420 C1
7421-A E4
7421-B B4
7421-C B6
7421-D E6
7422 B8
7423 C8
7424 A9
7425 C9
7426 E8
7427 F8
7428 E9
7429 G9

Layout Geomagnetic correction panel

0225	A1	3428	B2	3440	C1	3458	B3	6431	A3	7425	C2
0239	C3	3429	C2	3441	C1	3459	C3	6432	B1	7426	C2
0249	B3	3430	A3	3442	C1	3460	C3	6433	B1	7427	C3
2420	B2	3431	A3	3443	C1	3461	C3	6455	A3	7428	C2
2421	B2	3432	A3	3450	B3	3462	C3	6456	A3	7429	C3
2422	B2	3433	B3	3451	B3	3463	C2	6457	B3	9401	A2
2423	C3	3434	C2	3452	B3	3464	C3	6458	B3	9402	B1
3420	A1	3435	C2	3453	B3	3465	C2	7420	A2	9403	C2
3421	B1	3436	B1	3454	C3	3466	C3	7421	B2	9404	C3
3425	B3	3437	C1	3455	A3	3467	C3	7422	C1		
3426	B3	3438	C1	3456	A3	3468	C3	7423	C1		
3427	B2	3439	C2	3457	A3	6430	A3	7424	C1		

